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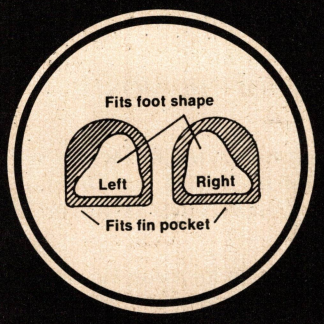
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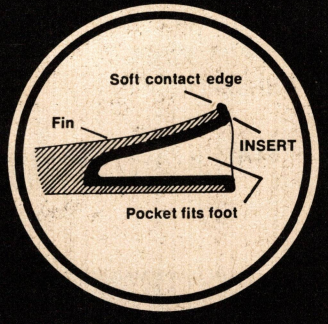
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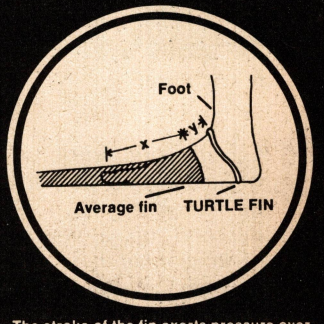
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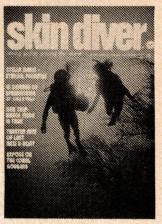
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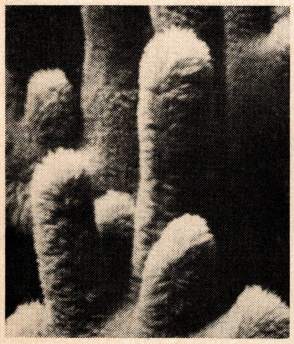
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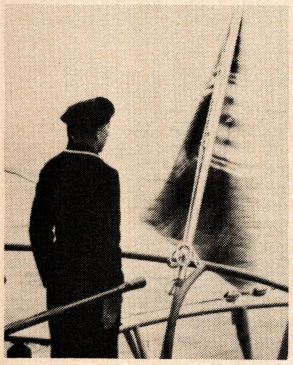




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Cover—Jorg Friese, director of Stella Maris Inn, and Donna Cooksey of California, descend on a vertical wall of gorgonian fans and giant sponges at the Conception Island drop-off, Stella Maris, Bahamas. Photograph by Paul J. Tzimoulis. For more on Stella Maris diving see feature story on page 66.

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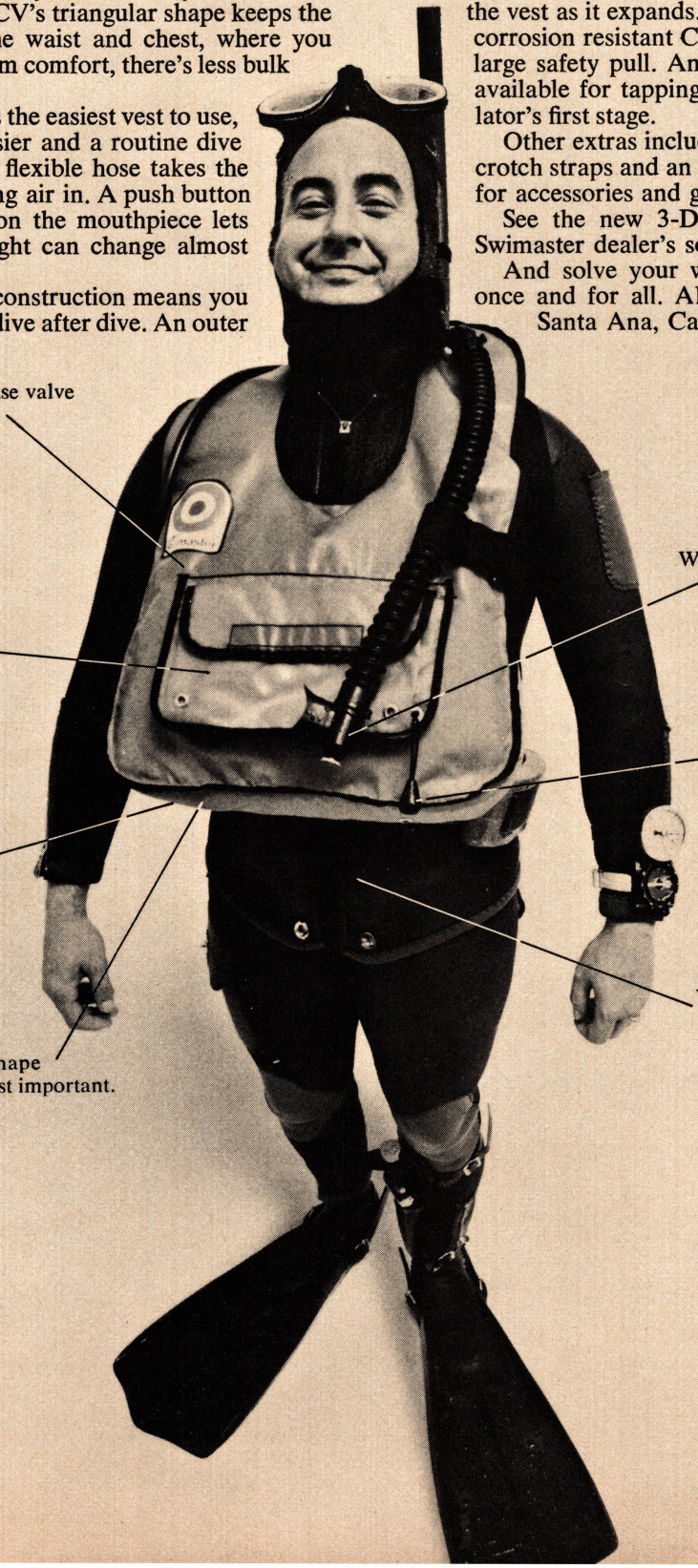
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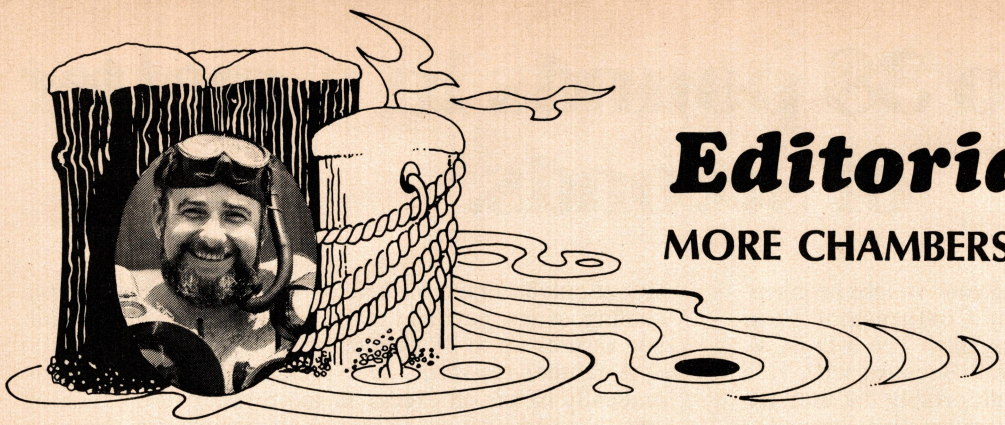
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Editorial

MORE CHAMBERS NEEDED

by the Publisher

Sport diving has changed greatly in the past five years, with an influx of greater numbers of enthusiasts and a trend toward more sophisticated modes of diving. Most significant of all, however, has been the mass migration of divers from turbid, chilly North American waters to the tropics. Each year more than 100,000 scuba enthusiasts travel southward to sunny dive resorts located in the Bahamas, Caribbean, Mexico, and the Pacific Isles. The "dive trip," or diving vacation, has become an institution; the ideal way to perpetuate one's interest in the adventurous sport.

Unfortunately, this new trend toward tropical diving has created a new danger. Resort waters are warm, clear, and inviting, and vacationing divers are eager to make the most of their once-a-year pilgrimage. Diving two or three tanks per day appears easy and comfortable, for the water temperatures range from 79 to 84 degrees. Descents usually range deeper than 33 feet, often exceeding the 100 foot mark. Deep water drop-offs, vertical coral walls, and deep wreck exploration have now become a way of life in resort areas.

It is this new trend — this high number of sport divers engaged in serious repetitive diving — which greatly increases the chances of bends accidents. One Caribbean resort operator recently reported some 63,000 dives logged at his resort over the past few years, and frankly admitted that he expected an accident at any time. The odds were piling up against him. "Put enough people in the water often enough, and you're bound to have a hit," he commented.

The horrifying part of this picture is that the establishment of new recompression chamber facilities has not kept pace with the tremendous growth of resort diving facilities. The latest issue (revised in 1973) of the *International Listing of Chambers,* published and distributed by NAUI, shows a pitiful total of five treatment chambers in the entire Caribbean . . . one in Cuba, two in the Bahamas, one in Puerto Rico, and one in the Virgin Islands. Compare this with the 60 to 70 dive resort operators and hotels which offer scuba diving excursions to depths greater than one atmosphere!

Why so few chambers? Why no chambers in some of the busiest dive resort areas in the world (Cozumel, Cayman, etc.)? In most cases, the island governments are more concerned with the health and welfare of their own citizens . . . foreigners (American tourists included) are no concern of theirs. Knowledge about the bends is also limited, and many island hospital directors have given little thought to this problem being a serious health hazard. The hotels and dive resort operators have also shied away from the thought of a chamber installation because of the expense involved and the responsibility of operating such a facility.

The visiting diver is equally at fault, for he rarely poses the most important question of his life, "Where is the chamber located?" Steeped in the holiday spirit of vacation living, the resort visitor seldom gives a thought to the dangers of repetitive diving on a daily basis, nor what might happen if he does get bent. He wrongly assumes that he would be well cared for and quickly treated. He doesn't stop to realize that he is a long way from the good old U.S.A. where speedy emergency service and expert medical care are only as far away as the nearest telephone.

Medical experts agree unanimously that the single most important thing in the treatment of decompression sickness is to get the victim to a recompression chamber and begin treatment as quickly as possible. Every minute counts, for speedy treatment can help avoid permanent neurological damage such as paralysis, blindness, or even death. The obvious answer to reduce the chances of permanent nerve damage is to *position the recompression chamber as close to the scene of the diving activity as possible.* Ideally, every dive resort operation should have a treatment chamber on the premises, just as handy as the air compressor station.

Some of the more progressive resort operators have already taken action or are presently in the process of setting things up. For example, the Underwater Explorers Club of Freeport, Grand Bahama, has a four-man Perry Oceanographics chamber installed dockside. The dive resorts around Montego Bay are in the process of establishing a Jamaica Dive Resort Association, and have been urging the government to install a chamber at the hospital. In Bonaire, Capt. Don Stewart is in the process of converting a large steam boiler into a treatment chamber.

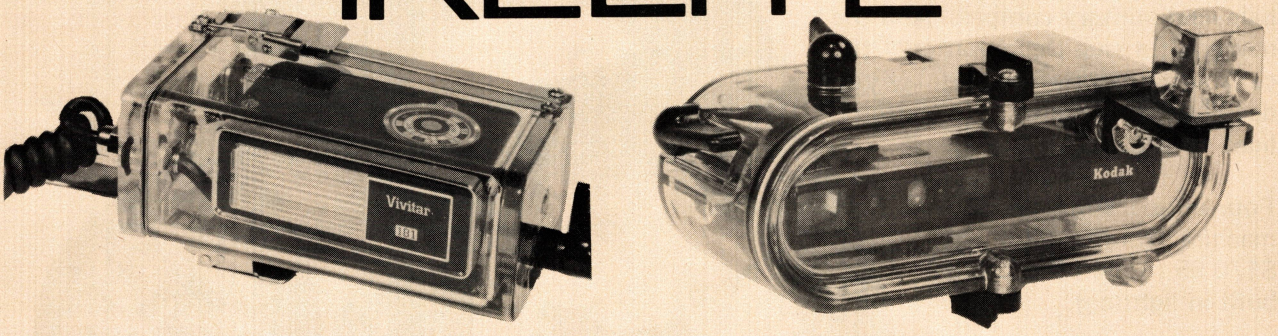
It is up to the diving public, the dive resort visitor, to convince the resort operators that he must accept the responsibility of accident treatment as well as prevention. Hoping that no one will get bent is not enough. Dive resorts must be prepared to treat bends cases swiftly and effectively. They must be willing to either install their own chamber, persuade the local island government to install one at the hospital, or be prepared to provide speedy emergency air service to some off-island chamber facility.

The cost of a small, emergency chamber facility is about equal to a heavy duty commercial air station, and should be treated as part of the necessary overhead in operating a diving business. If the resort operator is willing to take the customer's money for air refills and scuba services, he must also be willing to accept the responsibility for that person's safety and welfare in case of an accident. And without a chamber nearby, survival and successful recovery of a bends victim is unlikely.

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Driftwood

. . . It was with much amazement with which I read Dr. Grossan's recommendations on drugs to take for congestion before diving — not because they weren't the right drugs, but the light way he recommended Sudafed. Sudafed is a very good decongestant; it resembles the body's compound adrenaline (ephinephrine) but for this reason it also produces a number of side effects — especially in the 60 mg. dose. These may include increased blood pressure and heart rate, hyperexcitability, and nervousness. These are especially noticeable when the person is surprised by the unexpected, and may severely frighten the individual when he feels his heart racing.

For those who do wish to dive with mild congestion, try one tablet at a time four times a day, the day before if possible, then increase the dose. If two tablets don't work, don't dive. The cardiovascular effects increase greatly from one to two tablets, so stick to one tablet whenever possible. It's no place to be a nervous Annie at 100 feet.

PAM LENHERT, Student
USC PHARMACY SCHOOL
L.A., CALIF.

. . . Thank you for the excellent article you did on me for the January SKIN DIVER. It was the best presentation of my activities that has ever been written. I'm sure you had to sweat over some of that mass of material I gave you, but you came up with a truly wonderful article.

JOHN D. CRAIG SO. LAGUNA, CALIF.

. . . The cartoon on page 10 of the December issue of SKIN DIVER brings to mind an incident that occurred several years ago while diving in Lake Okobaji, Iowa. Two divers were going to dive an area of about 35 to 40 feet and tow the divers flag on an innertube float. One of the divers measured off about 40 feet of 400 lb. braided line fastened to the tube and tied the end to his weight belt so as to have both hands free. After about 20 min. into the dive a pleasure boater came to the flag, picked it up, tube and all, and placed it in the back seat of an open outboard boat. With no further caution he proceeded to take off at full speed. The tube and flag popped out of the seat and back into the water. The diver was given a severe jolt around the midsection but was not harmed.

(Continued on Page 10)

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Driftwood

(Continued from Page 8)

By this time the boat turned around and came back to pick it up again. The divers stayed down, fearing the boat prop, and were not able to determine its exact location. After observing this incident, I reached the other boat in time to stop the second occurrence with a few words of advice.

One good lesson learned. Never tie the float to the diver in a manner that can't be pulled free. We use a breakable plastic clip when necessary to have both hands free or otherwise hold the line reel in one hand.

ROGER GARNJOBST
MT. PLEASANT, IOWA

. . . On the matter of SKIN DIVER content: of late the magazine seems to have been taken over by persons who can spend at least $5000 annually on dive tours to far-off exotic places. Most of the divers I know, including myself, cannot afford to go to the places portrayed in your travel section, and feel your stories might deal with places closer to home and more realistic for the everyday diver's pocketbook, like the SDM of four or five years ago used to do.

MIKE WILLIAMS
SAN FRANCISCO, CALIF.

. . . We enjoyed your report about diving in St. Croix. There was, however, an error made in reporting the duty free allowances for American citizens visiting our lovely islands. Our citizens are allowed $200 duty free rather than the $100 reported. The $200 allowance is double that of any other place an American citizen may visit. The U.S. Government has done this to encourage Americans to visit and shop in the U.S. Virgin Islands, thereby keeping the American dollar at home. Also increased is the number of duty free bottles of liquor one may take home. Americans may take five fifths of liquor, duty free, so they can have a big party while showing their underwater slides of our magnificent reefs and fish.

LINDA ELLIS VIRGIN ISLANDS DIVING SCHOOLS, ST. THOMAS, U.S.V.I.

. . . Just thumbing through my November SKIN DIVER and read the deal about napping sharks. I don't know if you're aware of it or not, but the white tips around Kona sleep in caves and arches, too. I've seen several and gotten a couple of good starts from them while bugging.

TOM TATUM SANTA ROSA, CALIF.

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AQUA VENTURE DIVING SCHOOL, 6600 N. Mannheim Rd., Des Plaines
GREAT LAKES UNDERWATER SPORTS INC., 7501 W. Diversey, Elmwood Pk.
UNDERSEA DIVERS SUPPLY, 7942 W. 95th St., Evergreen Park
UNDERSEA DIVERS SUPPLY, 504 W. Burlington, La Grange

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INDIANA SALVAGE DIVERS, 1014 E. Reynolds, Goshen (Howard's Scuba Shop)
THE PRO DIVE SHOP, 670 Huffman St., Fort Wayne

IOWA
QUAD-CITY DIVE SHOP, 2238 West River Rd, Davenport

KANSAS
FRANK'S DIVE SHOP, 1226 E. Harry, Wichita

KENTUCKY
AQUA SHOP INC., 829 Euclid Ave., Lexington
HAROLD'S SCUBA, 104 Hunter St., Dawson Springs

LOUISIANA
DIVER'S EXCHANGE, 2245 Breaux, Harvey

MARYLAND
AQUANAUTICS, 5811 Falls Rd., Baltimore
DIVERS DEN, 8105 Harford Rd., Baltimore
DIVERS WORLD, 8227 Fenton St., Silver Springs
KING NEPTUNE DIVE SHOP, 904 A West St., Annapolis

MASSACHUSETTS
AQUARIUM DIVE SHOP, 20 Atlantic Ave., Boston
CHATHAM DIVE INN, Rt. 28, Chatham
NEW ENGLAND DIVERS, INC., Tozer Rd., Beverly
STANTON RESEARCH, 12 Broad St., Nantucket Island
HOLYOKE UNDERWATER SUPPLY, 50 N. Main St., So. Hadley Falls

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AQUA HUT, 1247 Rosewood St., Ann Arbor
MICHIGAN UNDERWATER SCHOOL OF DIVING, 3280 Fort St., Lincoln Park
UNDERWATER SPECIALISTS, G-4084 Corunna Rd., Flint
WOLFE ENT., 205 Wayne St., St. Joseph

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LAKE SUPERIOR DIVERS, 3028 W. 3rd St., Duluth
THE SPORTSWORLD SOUTH, INC., 5015 Penn Ave., S. Edina

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T. & D. DIVE SHOP, 8135 North Oak Trfwy., Kansas City
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DIVERS DEN DIVE SHOP, 1 Leda Ave., Manchester
UNDERSEA ENTERPRISES, 46 State St., Portsmouth

NEW JERSEY
AQUATIC RECREATIONAL ENT., Delsea Drive Rt. 47, Hurfville
DIVERS COVE, Rt. 35, Laurence Harbor
M & E MARINE SUPPLY, Rt. 130 Woodbyne, Camden
UNDERWATER SPORTS OF N.J., Rt. 17, Rochelle Park

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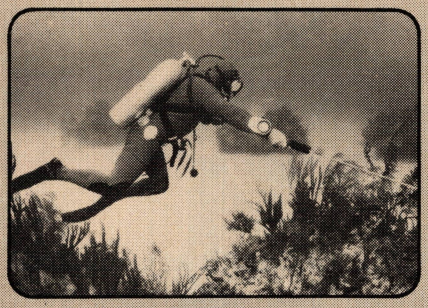
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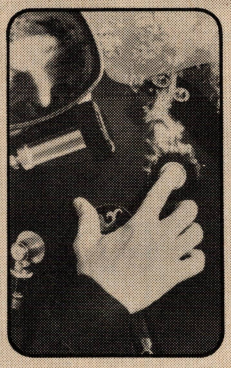
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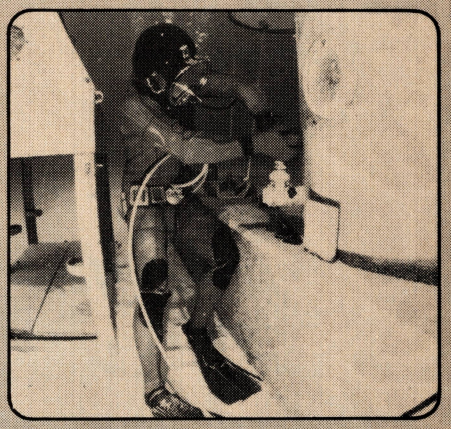
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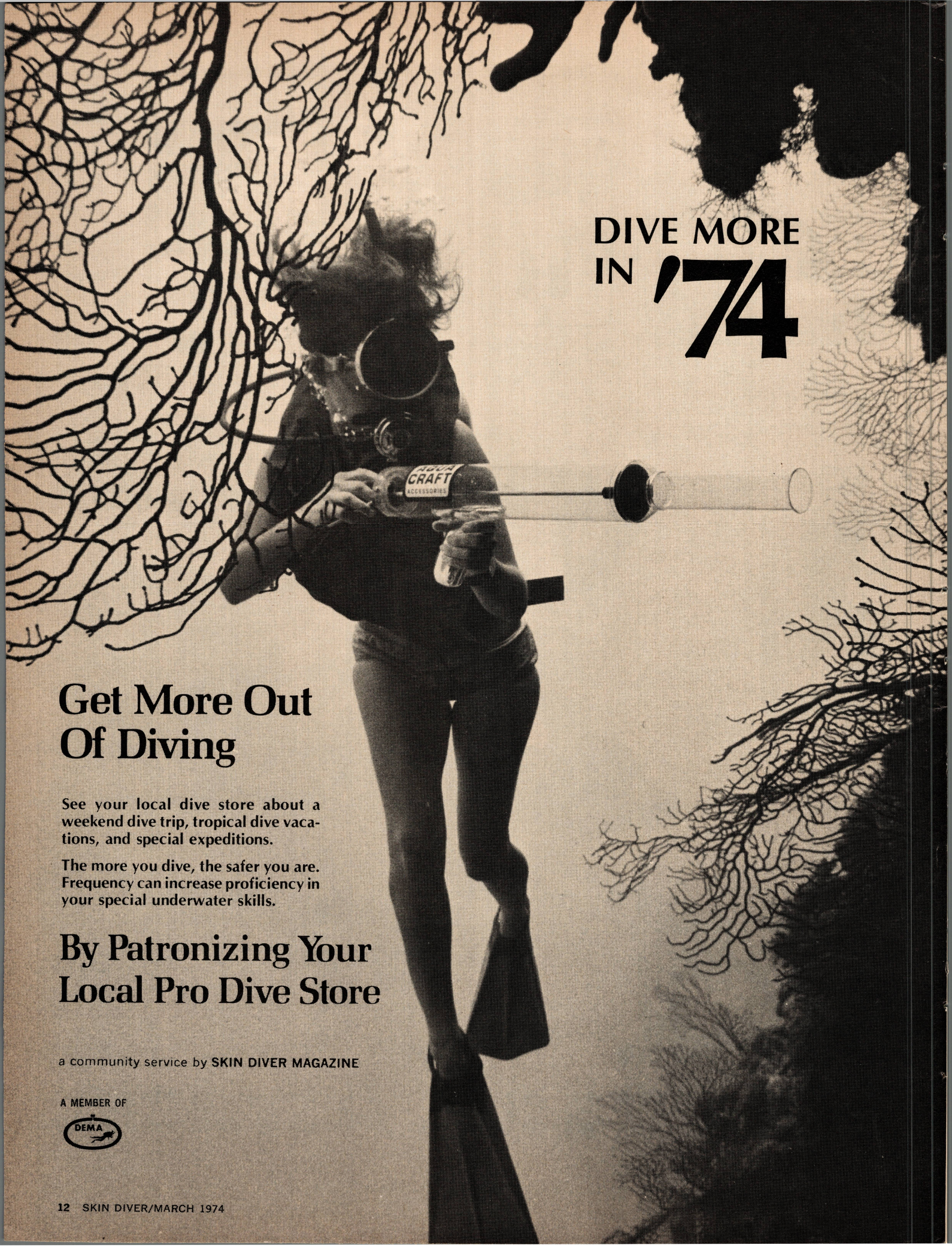
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LOSS OF A SCUBA DIVING FRIEND

BY GEORGE AND BETTEY TOMASI

Dr. Art Walker is dead. He died while scuba diving. Air embolism? Bends? Equipment malfunction? Panic? None of these. The autopsy showed that Art suffered a heart attack.

Art Walker, Ph.D., was an all-American football player, generally athletic and a certified scuba diver. After the initial shock which accompanied the unexpected loss of our friend and colleague at Northern Michigan University, we learned that Art was aware that he had an enlarged heart and several other complications which would render him totally unsuited for the sport of scuba diving. Yet his medical report, which is a requirement here, indicated that he was physically fit for diving. How could such a thing happen? More to the point, what can we do to prevent such an accident from recurring?

The problem is complex. Ideally every diver (and instructor) should be examined annually by a diving doctor. Unfortunately, this is impractical for most. If we allow legislation to get into the act, though, this and more may well become a requirement.

Consider the FAA requisites. This federal agency licenses certain doctors to perform examinations on pilots. These exams fall into three classifications: first, second and third. The first classification is the most complete and is applicable to airline pilots. The second is given to the commercial, air taxi, pilot instructor, etc., and the third to the private pilot. First class also requires an electrocardiogram at age 35 and annually after age 40. It is frightening to think that some legislator might place similar restrictions on the diving community with first class exams possibly being required for instructors who are responsible for students' lives.

What type of preventive medicine, then, is indicated? Perhaps we can take a page from the National Hot Rod Association's book. It has developed a standard physical very similar to the FAA requirements for third class exams. Members must be examined every two years. It seems reasonable that the diving community could call upon the expertise of a diving doctor or doctors to develop a standard physical form which would emphasize the specific problems involved. This type of standardized form would be an invaluable aid to the landlocked doctor who has not had the opportunity to understand these problems. If each of the major national certifying associations were to adopt this form and make it a mandatory part of the certification process, we might prevent unwanted legislation in this area of our sport.

Art Walker was 39. He was also a husband and father. Let's do something to prevent such a tragedy from happening again before something is done for us.

The Start Of Something Great

This summer, experience life in an aquatic environment, as a part of Florida Institute of Technology's Summer Program in Marine and Environmental Studies. Along the white, sandy beaches of Florida and the spectacular coral reefs of the Cayman Islands, this 4 week High School program will offer the finest combination of education and recreation in an interrelated curriculum of Biology, Oceanography, Underwater Photography, Scuba, Ecology, and Sailing.



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You breathe compressed air that can dry out the lining of your lungs. You operate at depths that can disrupt oxygen/CO_2 balance. As a free diver, you hyperventilate and hold your breath for long periods.

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Instruction

March

YMCA Instructor Institute, Rochester, N.Y./New England area. (Contact: Walt Hornberger, 7161 Spire Falls Rd., Gansevort, N.Y. 12831)

March 2-3/9-10/16-17

Ron Church School of U/W Photography, Los Angeles, Calif. (Contact: Seacor, Box 22126, San Diego, Calif. 92122.)

March 2-3

YMCA Instructor Institute, Odessa, Texas. (Contact: Frank Parrish, 1007 Ninth, Wichita Falls, Texas 76301)

March 2-3

YMCA Instructor Institute, San Jose Workshop I. (Contact: Jack E. Belsom, Oakland Central YMCA, 2101 Telegraph Ave., Oakland, California 94612.)

March 2-9

NASDS Advanced Diver Training, Bermuda. (Contact: Skin Diving School of New York, 3470 Webster, Bronx, N.Y.)

March 4-9

UNEXSO Concentrated NAUI Certification Course. (Contact: UNEXSO, 1148, N.E. 48th St., Pompano Beach, Fla.)

March 7, 21, 28

Professional Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago 60632)

March 9, 10, 23, 24

Midwest Ice Diving Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

March 9

Instructor Training Workshop. (Contact: Skin Diving School of New York, 3470 Webster Ave., Bronx, N.Y.)

March 9 - 10

NAUI Safety Seminar, Ocean Corp., Houston, Tex. (Contact: NAUI Southwest Branch, 2120 Peckham St., Houston, Texas 77019.)

March 10, 14, 21, 24

Underwater Photo Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago Ill., 60632)

March 11

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

March 11-15

UNEXSO/Schulke U/W Photography Workshop, Basic. (Contact: UNEXSO 1148 N. E. 48th St., Pompano Beach, Fla. 33064.)

March 15-17

YMCA Instructors Institute, Billings, Montana. (Contact: Leona Schrupp, 402 No. 32nd St., Billings, Montana)

March 15-17; March 29-30; April 19-20

NACD-PADI Cave Diving Course, Branford, Fla. (Contact: R. S. Dickens, 7212 Eudine Dr. N., Jacksonville, Fla. 32210)

March 16-17
YMCA Instructor Institute, San Jose, Workshop II. (Contact Jack E. Belsom, Oakland Central YMCA, 2101 Telegraph Ave., Oakland, California 94612.)

March 16-17
YMCA Instructor Institute, Odessa, Texas. (Contact: Frank Parrish, 1007 Ninth, Wichita Falls, Texas 76301)

March 16
YMCA Pre-Institute Workshop, Houston, Texas. (Contact: Jan McGinnis, 10010 Memorial #1413, Houston, Tex. 72024)

March 19
NAUI Advanced Diving Course. (7 weekends). Washington, D.C. area. (Contact: LCDR B J. McGee, USN, 4206 Plaza Lane, Fairfax, Virginia 22030)

March 23
NAUI Diver Rescue Workshop, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, New Jersey 08023)

March 23
YMCA Pre-Institute Workshop, Dallas, Texas, & Lawton, Okla. (Contact: D. Pat Ryan, 4332 Northaven Rd., Dallas, Texas 75229 & Ray Anderson, 1724 Elm, Lawton, Okla. 73501)

March 23 (5 weekends, excluding Easter)
PADI Advanced Open Water Program. (Contact: Marty Bayerle, Brooklyn Divers, 2917 Ave. I, Brooklyn, N.Y. 11210)

March 23-30
Diving Medical Seminar, chaired by Dr. S. Harold Reuter, Anthony's Key Resort, Roatan Honduras. (Contact: Kathy Taylor, Island Reef Safaris, 34 Ground Pine Rd., Wilton, Conn. 06897)

March 23-24
YMCA, Scuba Instructor Institute. Youngstown, Ohio. (Contact: Dr. John H. Simpson, 33112 Lake Rd., Avon Lake, Ohio 44012)

March 23-24
NAUI Man's Extension Into The Sea, Seattle, Wash. (Contact: NAUI North Pacific Branch, 6531 N.E. 198th St., Seattle, Wash. 98155)

March 23-24
YMCA Instructor Certification Institute, Port Huron, Mich. (Contact: Ronald H. Smith, 33191 Kathryn, Garden City, Mich. 48135)

March 24
YMCA Instructors Institute, Rochester, N.Y. (Contact: Jack Radley, 49 Shoreway Dr., Rochester, N.Y. 14612)

March 24-29
NASDS Clinic, Rhode Island. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

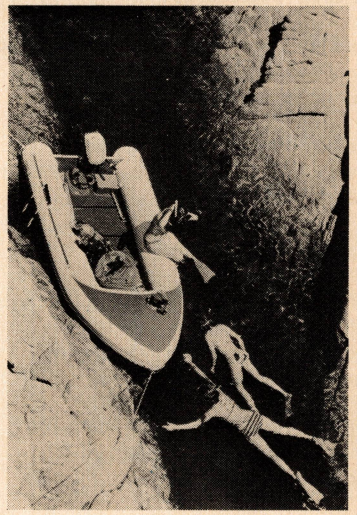
March 25-29
UNEXSO/Rose Marine Identification Workshop. (Contact: UNEXSO, 1148 N.E. 48th St., Pompano Beach, Fla.)

March 26
Underwater Photo Course. (Contact: Skin Diving School of New York, 3470 Webster Ave., Bronx, N.Y.)

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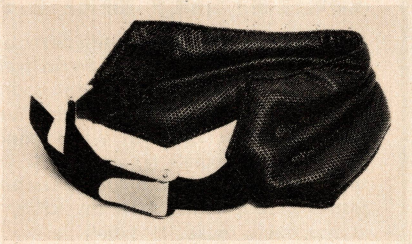
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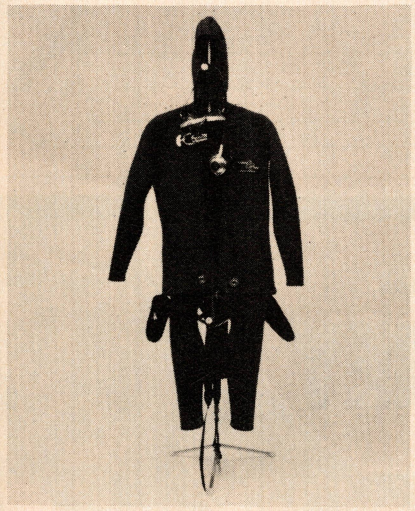


Belts are available in four colors:* Black, Dark Blue, Sky Blue and Bright Orange.

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Instruction

March 29-31
YMCA Instructor Institute, San Jose, (Contact: Jack E. Belsom, Oakland Central YMCA, 2101 Telegraph Ave., Oakland, California 94612.)

March 30
NAUI U/W Symposium & Film Review, College Park, Md. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

March 30
YMCA Instructor Institute, Albany, N.Y. area. (Contact: Walt Hornberger, 7161 Spire Falls Rd., Gansevort, N.Y. 12831)

March 30-31
NAUI Instructor Qualification Program, Mount Royal College, Calgary, Alberta, Canada. (Contact: NAUI Canada, 10 Mount Ave., Etobicoke, Ont., Canada.)

March 31
NAUI Underwater Photo Seminar, College Park, Md. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

April 1-6
UNEXSO Concentrated NAUI Certification Course. (Contact: UNEXSO, 1148, N.E. 48th St., Pompano Beach, Fla.)

April 6
NAUI Underwater Symposium, Cambridge, Mass. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

April 6-7; 18-19
NAUI/YMCA Crossover Certification, Temple University, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, Drawer C, Deepwater, N.J. 08023.)

April 6-7
YMCA Workshop, Houston, Texas. (Contact: Jan McGinnis, 10010 Memorial #1413, Houston, Texas 72024)

April 6-14
NAUI Extended Bio-Marine Exploration Seminar, San Diego, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Diego, Calif. 90732)

April 7-13
NAUI Instructors Certification Course, Santa Barbara, Ca. (Contact: NAUI Pacific Branch, 867 Basin Street, San Pedro, Calif. 90732.)

April 8, 15, 22, 29
Underwater Photo Course, Chicago. (Contact: Berry, 4989 S. Archer Ave., Chicago, Ill. 60632)

April 8-13
Ron Church School of U/W Photography, Gloucester, Mass. (Contact: Seacor, Box 22126, San Diego, Calif.)

April 10, 17, 24
Professional Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago 60632)



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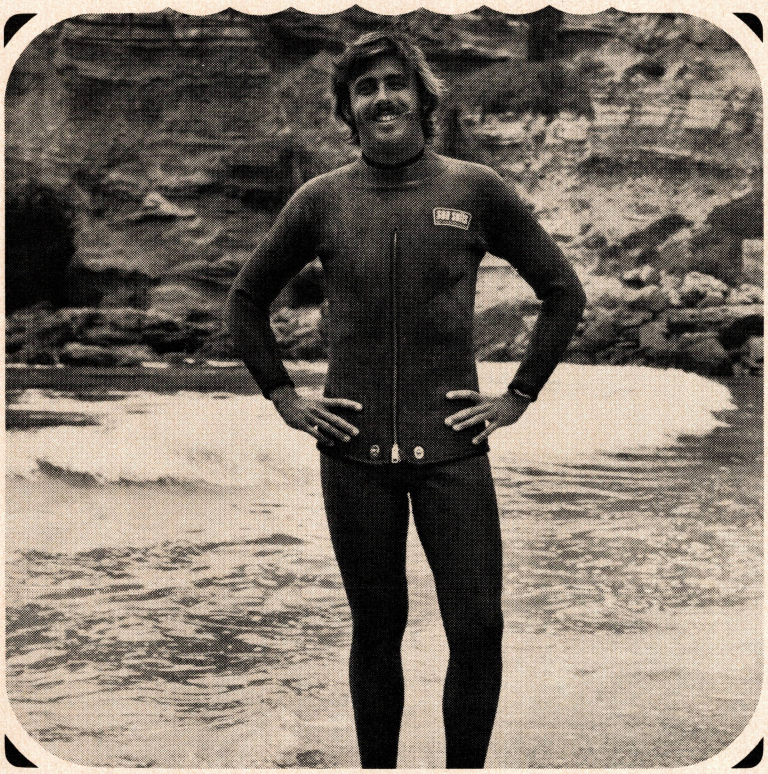
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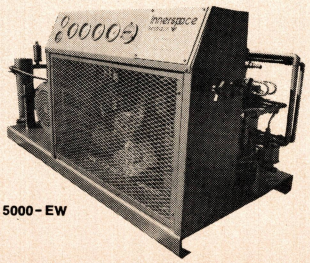
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Instruction

April 13-20
NAUI Instructor Certification Course, Portland, Maine. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

April 15
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

April 15
Professional Diving Instructor Course, Monterey, Calif. (Contact: Ed Brawley, 598 Foam St., Monterey, Calif. 93940)

April 15-19
NAUI Advanced Diving Course. Cay Sal Island. (Contact: LCDR B. J. McGee, USN, 4206 Plaza, Fairfax, Va. 22030)

April 18-June 7
NASDS College, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

April 19-21 (4 weekends)
NAUI Industrial Orientation Course, Los Angeles, Ca. (Contact: NAUI Headquarters, 22809 Barton Rd., Grand Terrace, Colton, California 92324.)

April 20
NAUI Underwater Film Review, New York. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

April 20
PADI Master Diver Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

April 20-21
YMCA, Scuba Instructor Institute. Springfield, Ohio. (Contact: Fred D. Crowner, 7459 Dixie Hwy. No. 3, Florence, Kentucky 41042)

April 20-22
NAUI Instructor Qualification Program, Montreal, Que., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ontario, Canada)

April 20-27
NASDS Advanced Diver Training, Bahamas. (Contact: Skin Diving School of New York, 3470 Webster, Bronx, N.Y.)

April 21
YMCA Instructors Institute, Rochester,, N.Y., (Contact: Jack Radley, 49 Shoreway Dr., Rochester, N.Y. 14612)

April 21
NAUI/Underwater Photo Seminar, Columbia University, New York City, N.Y. (Contact: NAUI North-Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117.)

April 21-26
Ron Church School of U/W Photgraphy, Chicago, Ill. (Contact: Seacor, Box 22126, San Diego, Calif. 92122.)

April 22-28
Veterans Administration and U. of Calif. Basic Diving Medicine Course, Fresno, Ca. (Contact: Vincent O'Hara, M.D., Veterans Hospital, 2615 Clinton Ave., Fresno, Calif. 93703)

April 26-28/May 4-5 & 11-12
PADI Instructor Certification Institute, Chicago. (Contact: Ralph D. Erickson 23R, 6301 N. Sheridan Rd., Chicago, Illinois 60660)

April 27-28
Y.M.C.A. Instructor Recertification & Updating, New York - New England Areas. (Contact: Charles L. Dennis, USCG Academy, New London, Conn.)

April 27-28
YMCA Instructor Institute, Houston, Texas. (Contact: Jan McGinnis, 10010 Memorial #1413, Houston, Texas 72024)

April 27-May 5
YMCA Instructors Institute, Anthonys Key, Roatan, Honduras. (Contact: Tom Mount, Diving Officer, U. of Miami, 10 Rickenbacker Cswy., Miami, Fla.)

April 28
NAUI Underwater Photo Seminar, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

May 3-10
Ron Church School of U/W Photography, Bonaire. (Contact: Bob McGuire, Royal Caribbean Services, 609 5th Ave., N.Y., N.Y. 10017, or John Skadberg, Box 22126, San Diego, Calif.)

May 4-5 (1st of 6 weekends)
NAUI Instructor Certification Course, Rockport, Mass. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

May 5-6
YMCA, Scuba Instructor Institute. Springfield, Ohio. (Contact: Fred D. Crowner, 7459 Dixie Hwy. No. 3, Florence, Kentucky 41042)

May 6-11
UNEXSO Concentrated NAUI Certification Course. (Contact: UNEXSO, 1148 N.E. 48th St., Pompano Beach, Fla.)

May 7, 14, 21, 28
Professional Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

May 10, 24, 31
Underwater Photo Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

May 11
NAUI Diver Rescue Workshop, New York. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

May 11-12
NAUI Instructor Qualification Program, Santa Ana, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, California 90732)

May 11-18
UNEXSO/Physicians Course in Diving Medicine - Basic. (Contact: UNEXSO, 1148 N.E. 48th St., Pompano Beach, Florida 33064)

(Continued on Page 32)

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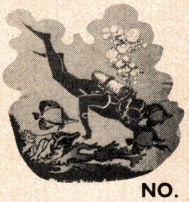
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Calendar

March 2
Your Future in the Sea '74, Hunter College, New York City. (Contact: American Littoral Society/Symposium, 33-38 164th St., Flushing, N.Y. 11358)

March 8
California U/W Film Exposition, Anaheim Convention Center, 8 p.m. Exhibits, 3-8 p.m. (Contact: California Underwater Exposition, P.O. Box 10931, Santa Ana, Calif. 92711)

March 9
20th Boston Sea Rovers Clinic. Seminar, Boston University; evening show, John Hancock Hall. (Contact: Robert Newberry, 10 Fitz Ter., Chelsea, Mass.)

March 15
International Photo Competition deadline, Pacific Science Center, Seattle, Wash. (Contact: Competition, 6531 N.E. 198th St., Seattle, Washington)

March 23-24
Man in the Sea Symposium, Pacific Science Center, Seattle, Wash. (Contact: Symposium, 6531 N.E. 198th Street, Seattle, Washington 98155)

April 6
Underwater Symposium, Harvard University, 11 a.m.-4 p.m. Film Review, John Hancock Hall, 8 p.m. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

April 20
Inner Space Society U/W Symposium and Film Revue, Southeastern Massachusetts U., No. Dartmouth, Mass. Daytime seminars, 10-4; evening program, 8 p.m. (Contact: Walter Westphal, 507 Putnam Ave., Cambridge, Mass. 02139.)

April 20
NAUI Underwater Film Review, Columbia University, N.Y. City, 1:30 p.m. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

April 27
NAUI Underwater Symposium & Film Review. Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

May 3-5
Our World/Underwater, Sheraton-Chicago Hotel and Medinah Temple. (Contact: Joyce Markstahler, 6222 N. Cicero Ave., Chicago, Illinois 60646)

June 22-29
CEDAM Annual Meeting and Symposium, Club Akumal Caribe. (Contact: Cedam International, 5820 Burning Tree, El Paso, Tex. 79912)

September 21
NAUI U/W Film Review, Fall Edition, John Hancock Hall, Boston, 8 p.m. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

October 4-6
NAUI 6th International Conference on Underwater Education, San Diego, Calif. (Contact: NAUI Hdqrs., 22809 Barton Rd., Colton (Grand Terrace), Calif.)



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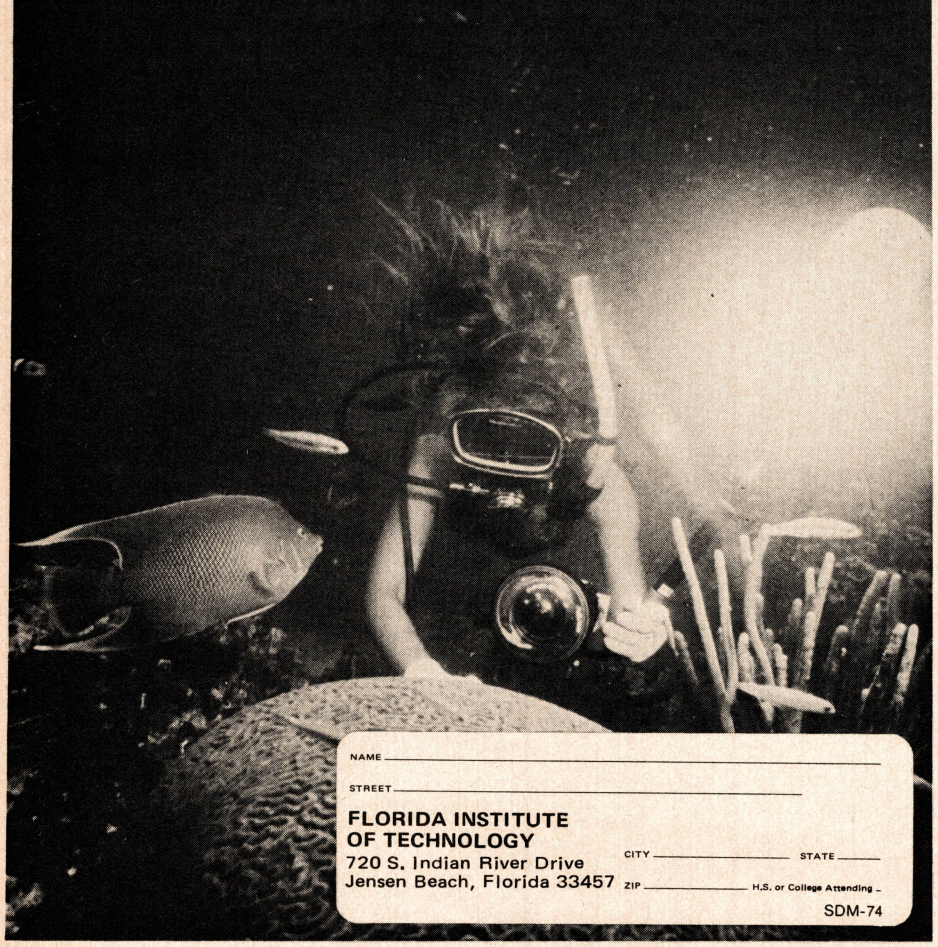
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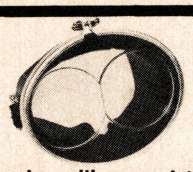
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UNDERWATER '74

Boston, Mass. — April 6

The Underwater Symposium and Film Review will be presented on April 6, 1974 in Boston, Massachusetts. Beginning at 11 a.m., the Underwater Symposium will include such exciting topics as: Recent Salvage Operations on the *Andrea Doria;* Marine Biology; Diving in the Military; Commercial/Industrial Diving; Underwater Photography; Physiological Aspects of Man in the Sea; Deep Diving Submersibles; and the Search for the Loch Ness Monster.

At 8 p.m., the Underwater Film Review will present Ley Kenyon and his breathtaking film account of the British Museum's Red Sea Expedition. The Expedition, led by Kenyon, had a two-fold purpose: to test the Admiralty Shark Repellents, and to make an underwater film for the BBC television. Ley Kenyon's film portrays the glory of the coral reef and its unusual inhabitants, intimate sequences of marine life, the discovery of a sunken ship, near disaster of his own ship on a coral reef, and shows how a seabed shark cage was used for close observation of the effects of repellents on man-eater sharks.

Popular filmmaker and recent *Andrea Doria* salvor Bob Hollis will present *The Great Doria Dive Mystery* during the evening program. Master of ceremonies will be Fred Calhoun, who will also present short cuts from his new comedy film *All in a Day's Dive.*

An annual feature of the Underwater program is the awarding of the Paul Revere Spike. The spikes are from the sunken frigate *U.S.F. New Hampshire,* a pre-Civil War ship that had all of its fittings fabricated in the foundry of Paul Revere. This year's recipient of the spike will be Ley Kenyon.

Tickets, at $3.50 each for the Underwater Symposium at Harvard University and the Underwater Film Review at John Hancock Hall, Boston, may be acquired in advance by contacting: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117.

OUR WORLD - UNDERWATER

Chicago, Ill. — May 3-5

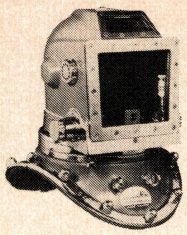
Seminars, workshops, a formal film festival, in-pool equipment demonstrations, certifying agencies meetings, and a careers in marine sciences program will again combine to make this year's Our World/Underwater "an experience in depth."

It all starts with a cocktail party Friday night, May 3, 1974, at 7:30 p.m. in the Sheraton-Chicago Hotel. The next morning, Saturday May 4, at 9 a.m., four concurrent seminars will begin at the hotel: Wreck Diving; Sharks and Underwater Mammals; Advanced Diver Programs; Equipment and People. After an hour break for lunch, the seminars will resume again with: Wreck Diving II; Submersibles, Saturation and Decompression; Dive the World; and Underwater Photography.

An Experience In Depth, the evening film festival at Medinah Temple, will begin at 8 p.m. Among the films to be shown are *As Long As We're Together,* the true adventure of a marine biologist and his family in Palau; *Behind the Scenes of Deadly Fathoms,* an account of the filming of the first dive 26 years after the nuclear blast at Bikini Atoll; *28 Above/Below,* diving with *Sub-Igloo* in the Arctic with Dr. Joe MacInnis; and *The Coral Sea* by Al Giddings, San Francisco.

Sunday, May 5, at 9 a.m., diving workshops will begin at the Sheraton-Chicago Hotel. Simultaneously with the workshops, four certifying agencies will be holding meetings and the careers in marine sciences program for high school and university students will be underway. At 1 p.m. some of the newest equipment in diving will be demonstrated at the Sheraton-Chicago pool. Participants are invited to get in the water and try the equipment out for themselves.

Tickets, purchased as a package, cost $16. Individually: cocktail party, $6; seminars, $5; workshops, $2. Contact: Tickets, Our World/Underwater, P.O. Box 643, Wheaton, Illinois 60187.



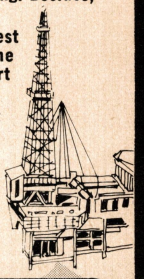
LOOKING FOR ADVENTURE? HIGH PAY? GET INTO DEEP SEA DIVING

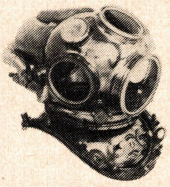


No other career offers the international adventure and excitement of deep sea diving. Besides, if you're already diving, why not make a career of it!

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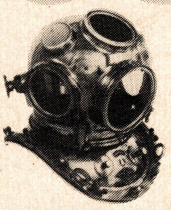
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FINAL CALL

1ST California U/W Exposition Anahiem Convention Center March 8

By Hillary Hauser



The lights are dimming and the curtain is going up on what will be the world's largest underwater exposition and film show. There are only a few days left to get advanced reserved seating to this event, but there will be a certain amount of tickets available at the box office.

If you get to the Convention Center (800 Katella Ave., Anaheim) at 3 p.m. on Friday, March 8, you'll be in for a gigantic exposition of the latest and greatest in diving equipment. Everything from snorkels to space-age electronic gadgets will be shown, and the manufacturers, inventors and those behind the scenes will be on hand to tell you what's new in their lines. But the frosting on the cake will be the evening film presentation, and the combination of action, adventure and excitement will make the First California Underwater Exposition the show that every diver has been waiting for.

If you want to see what happens to an underwater photographer who sneaks up to film a herd of female sea lions, then watch Al Giddings' film *Sea of Cortez*. It's dynamite! If you wonder what it's like to be underwater when red hot, molten lava spills into the sea from an erupting volcano, then watch Lee Tepley's *Fire in the Sea*.

If you've ever been curious to know what it's like north of the sunless Arctic circle and under Arctic ice, be on the watch for Dr. Joe MacInnis. His film on the *Sub-Igloo* habitat will take you 125 miles from the North Pole and you'll see divers walking upside down on the ice! What's it like to dive to the deep, forbidding grave of the once luxurious *Andrea Doria*? You'll find out as you listen to Jack McKenney as he shows photos and tells of the salvage attempt made last summer.

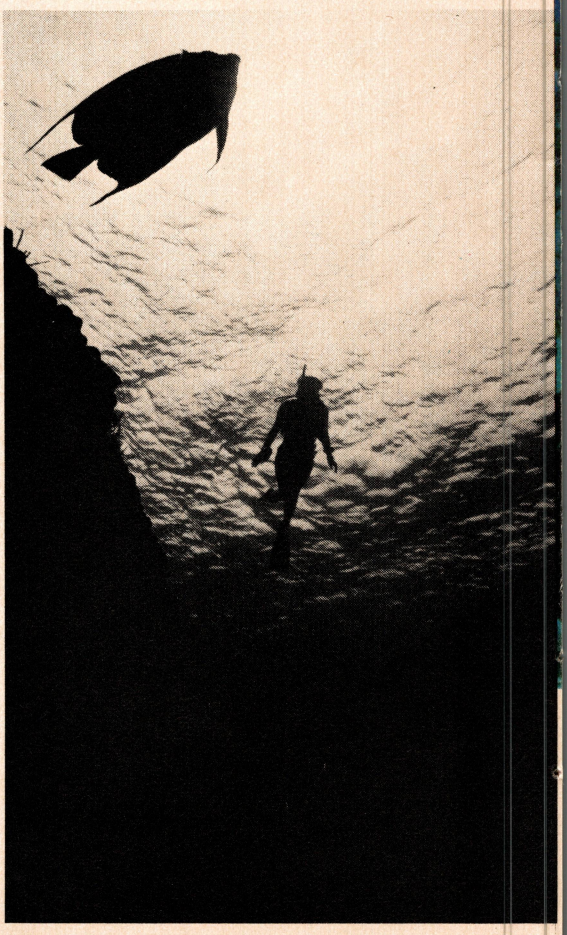
Imagine bringing up artifacts from a 2200 year old galleon, lost in the Mediterranean until Jacques Cousteau and the *Calypso* crew discovered it! Watch Jean-Michel Cousteau on stage present the film *The Sunken Galleon*, in which divers bring up artifacts and unopened jugs of wine from a ship that sank in 340 B.C. Jean-Michel Cousteau, noted master marine architect, designer of the Living Sea Museum aboard the *Queen Mary*, and planner of the world's first ecology resort on Wuvulu Island off New Guinea, will be at the California Underwater Exposition in person!

Remember the world record-smashing deep dive, made in 1962 by Hannes Keller, a young Swiss mathematician? That record is still unsurpassed even today, and Hannes Keller will be at the California Underwater Exposition with a short, classic film on his 1020 foot dive, made off Catalina Island. This is a rare U.S. appearance for Keller!

In the Beginning, a dynamic screen gem featuring small living species of the sea and the adventure of a child and sea animals, is a masterpiece by Ernie Brooks II, president of Brooks Institute of Photography, Santa Barbara. You'll get to see it at the California Underwater Exposition. Other goodies will include an artfully done film odyssey, *Deep Blue World*, by California film producer Dave Adams, and *Undercurrents*, a film from Europe by Robert Lehman that will show us what it's like in the midst of battling crabs and giant schools of squid.

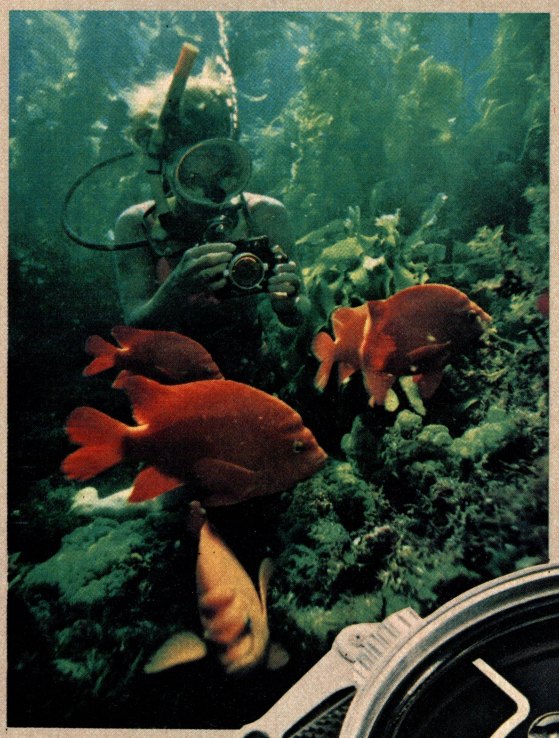
Exposition tickets are $6 and $4, and that lets you into the afternoon exposition as well as the evening show. Time is running out, so phone the California Underwater Exposition Committee at (714) 675-4350 to see about tickets. (Their address is Box 10931, Santa Ana, Calif. 92711).

Run, don't walk, to the Anaheim Convention Center on Friday, March 8. There will be a million things happening there that you'll want to be in on. Final call!



photograph by Jack McKenney

NIKONOS II IN ITS ELEMENT

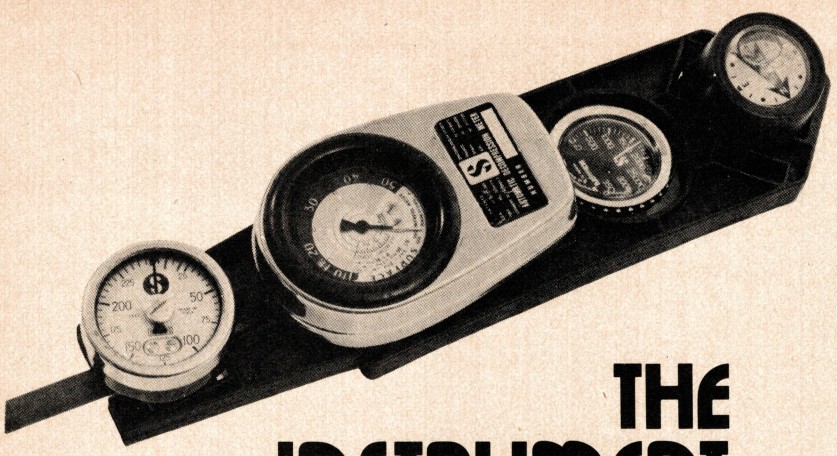


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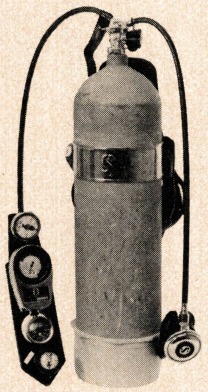
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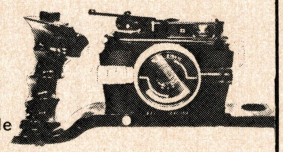
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MAN IN THE SEA

Seattle, Wash — March 23-24

Man In The Sea tells the theme of the NAUI Diving Association's sixth underwater symposium, to be held at the Seattle Pacific Science Center March 23-24, 1974. Program subjects, beginning at 9:30 a.m. each day, are designed to keep North Pacific area divers up-to-date in the fast moving sport and science of diving. Exhibits of 1974 underwater equipment and accessory lines will be integrated with the national science exhibits of the Pacific Science Center, at 201 Second Avenue North, Seattle.

Topics presented during the symposium will challenge the minds of novices, old time divers, scientists, underwater workers, and those who just like the water. Wreck diving will be highlighted. New films will show our underwater world while the "doers" share their adventures. Personal exchanges between speakers and audience will be emphasized, and smaller group rap sessions are scheduled. Experienced judges will critique the photographs of novices and experienced photographers in a workshop atmosphere. Photographers will also discuss each other's work.

An international underwater photo competition will be the arena for audience judging of outstanding photographic accomplishment in black and white prints, color prints and slides. Program chairman William L. High expects entries from anyone who likes to take underwater pictures. Cash prizes and ribbons will be awarded; entries must be received by March 15, 1974. The recipient of the 1974 Man of the Sea Award will also be made during the program. The award is presented annually to one person who has made a significant contribution to the sport of diving.

The complete two day program is $6. For symposium tickets and complete photo competition information, contact: NDA-NAUI, 6531 N.E. 198th Street, Seattle, Washington 98155.

DIVE AMERICA '74

College Park, Md. — March 30

On Saturday, March 30, 1974, the NAUI Diving Association (NDA) will present Dive/America/74. Hosted by the University of Maryland's College Park Campus in the zoology/psychology auditorium, Dive/America has gathered together underwater experts knowledgeable in all phases of diving and related sciences.

Daytime seminars, which begin at 10 a.m., will reflect this diversity of talent. Highlights will include Dr. Eugenie Clark with her film *The Sleeping Sharks of Mexico,* and Dave Woodward discussing underwater photography and Bahamian fish identification. The U.S. Navy will be well represented: Dr. Art Bachrach will present New Advances in Diving; Cmdr. William Spaar will discuss a recent 1600 ft. dive, Lt. Tom Hawkins will provide an introduction to UDT and Seal teams; and the new Navy Mark XII diving rig will be the subject of a talk by Chief Petty Officer Dick Arlington.

To give the sport divers of the Maryland area equal time, John Dudas will give a presentation on wreck diving off the East Coast, and Dave Bulloch will discuss local marine life. Ed Cargile will discuss NDA and then, putting on another hat, provide an introduction to the Ron Church School of Underwater Photography.

In the evening, beginning at 7:30 p.m., Dive/America/74 will feature three hours of slides and films never seen in the Washington area before, including: Dave Woodward's slide collage; *Inner Space Vibrations* by U.S. Divers Co.; *Eyes of the Sea,* a film produced by NBC for the Navy; the *Makai Range* presented by Bruce Templin and Art Bachrach; and a film by the late Ron Church. George Powell, the youngest master diver in the Navy, will highlight the evening with an account of the *Andrea Doria* expedition.

Tickets are $3 for the seminars and $4 for the evening show. Contact: Dive/America/74, Box 289, College Park, Md. 20740.



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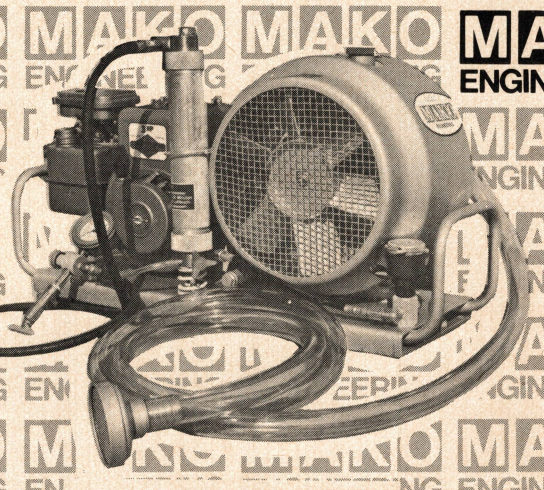
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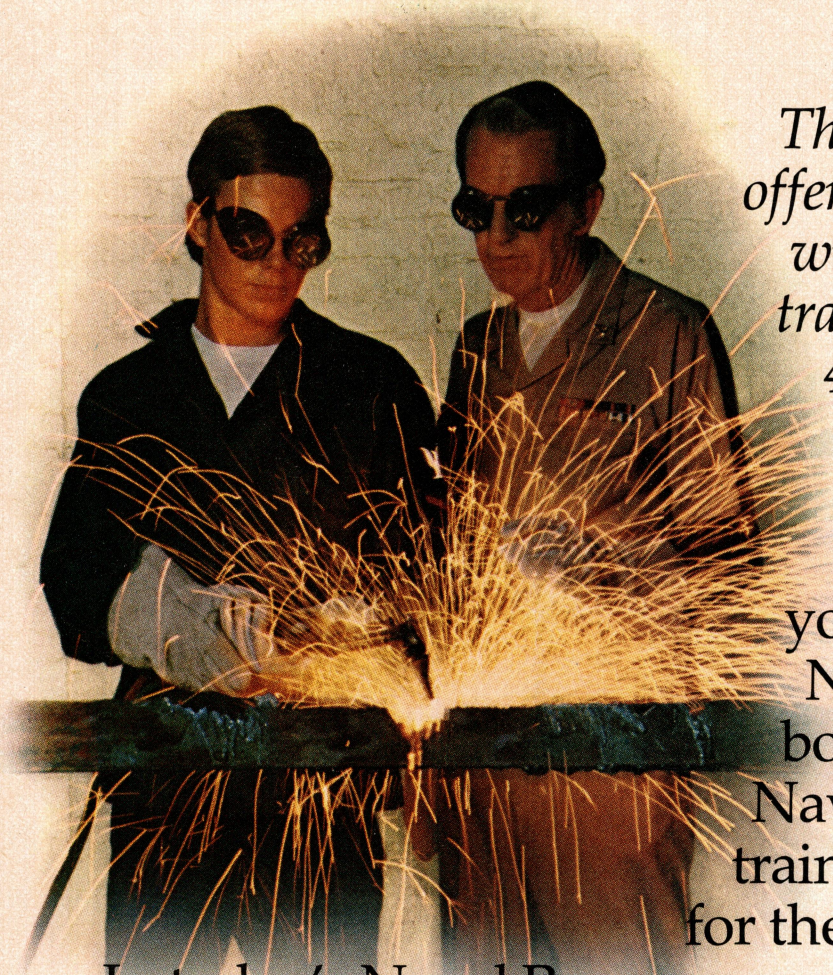
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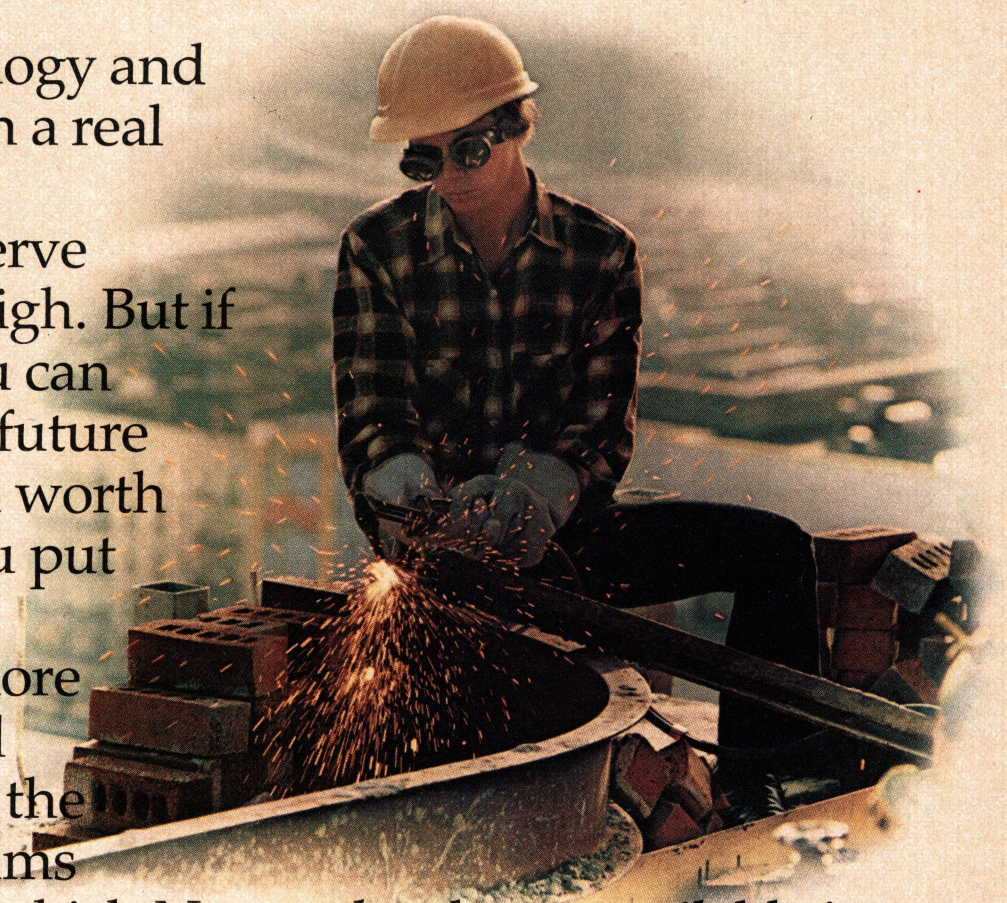
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____ Waist
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____ Wrist
____ Forearm
____ Elbow
____ Biceps
____ Ankle to Knee
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Instruction

(Continued from Page 19)

May 13
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

May 18-19
YMCA Instructor Institute, Houston, Texas. (Contact: Jan McGinnis, 10010 Memorial #1413, Houston, Texas 72024)

May 18-25
NAUI Instructor Certification Course, Baton Rouge, La. (Contact: NAUI Southwest Branch, 2120 Peckham St., Houston, Texas 77019)

May 18-26
NAUI Instructor Certification Course, (French language) St. Jean, Quebec, Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Canada)

May 19
YMCA Instructors Institute, Rochester,, N.Y., (Contact: Jack Radley, 49 Shoreway Dr., Rochester, N.Y. 14612)

May 19-22
UNEXSO/Physicians Course in Diving Medicine - Advanced. (Contact: UNEXSO, 1148 N.E. 48th St., Pompano Beach, Fla. 33064)

May 21
PADI Master Diver Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

May 25-27
7th Annual Seminar on Cave Diving, Jacksonville, Fla. (Contact: National Association of Cave Diving, 2900 N.W. 29th Ave., Gainesville, Fla. 32601)

May 26-31
Ron Church School of U/W Photography, Chicago, Ill. (Contact: Seacor, Box 22126, San Diego, Calif. 92122.)

May 28
NAUI Advanced Diving Course. (7 weekends). Washington, D.C. area. (Contact: LCDR B. J. McGee, USN, 4206 Plaza, Fairfax, Va. 22030)

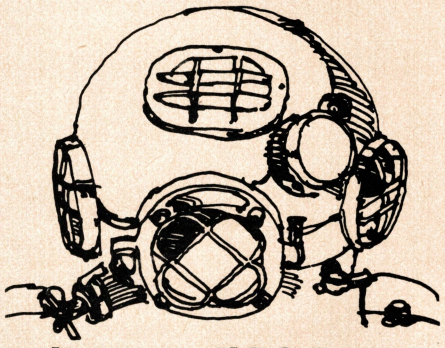
June
NAUI Instructor Training Course, Scripps Institute, San Diego, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Diego, Calif. 90732)

June
NAUI Instructor Training Course, Eureka, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, California 90732)

June
NAUI Divemaster Seminar, Victoria, B.C., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Can.)

June 1 (5 weekends)
PADI Advanced Open Water Program. (Contact: Marty Bayerle, Brooklyn Divers, 2917 Ave. I, Brooklyn, N.Y.)

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June 1-2
NAUI Instructor Qualification Program, Temple University, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, Drawer C, Deepwater, N.J. 08023.)

June 2, 9, 16, 23, 30
Underwater Photo Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

June 3-7
UNEXSO/Shulke U/W Photography Workshop, Basic. (Contact: UNEXSO, 1148 N. E. 48th St., Pompano Beach, Florida 33064.)

June 5, 12, 19, 26
Professional Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago Illinois 60632)

June 8-9
YMCA Instructor Institute, Houston, Texas. (Contact: Jan McGinnis, 10010 Memorial #1413, Houston, Texas)

June 8, 22
PADI Master Dive Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

June 8-9
YMCA Instructors Institute, Rochester,, N.Y., (Contact: Jack Radley, 49 Shoreway Dr., Rochester, N.Y. 14612)

June 10-14
UNEXSO/Rose Marine Identification Workshop. (Contact: UNEXSO, 1148 N.E. 48th St., Pompano Beach, Florida.)

June 15-23
NAUI Instructor Training Course, State College, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

June 16-21
NASDS Clinic, Seattle, Wash. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

June 16-23
Marine Biology for Divers, Dr. Steve Webster. Spanish Bay Reef, Grand Cayman, BWI. (Contact: Spanish Bay Reef, Box 800, Grand Cayman, BWI)

June 17
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

June 21-23
NAUI Divemaster Seminar, Tobermory, Ont., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Can.)

June 28-30
NAUI Cross-Over Program for Certified YMCA Instructors to become NAUI Instructors. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

June 29-30
YMCA Instructor Institute, Jonesboro, Ark. (Contact: Glenn Galtere, 2806 Harrisburg Rd., Jonesboro, Ark. 72401)

June 30
Rick Frehsee Underwater Photo Course, Roatan, Honduras. (Contact: Kathy Taylor, Island Reef Safaris, 34 Ground Pine Rd., Wilton, Conn. 06897)

(Continued on Page 38)

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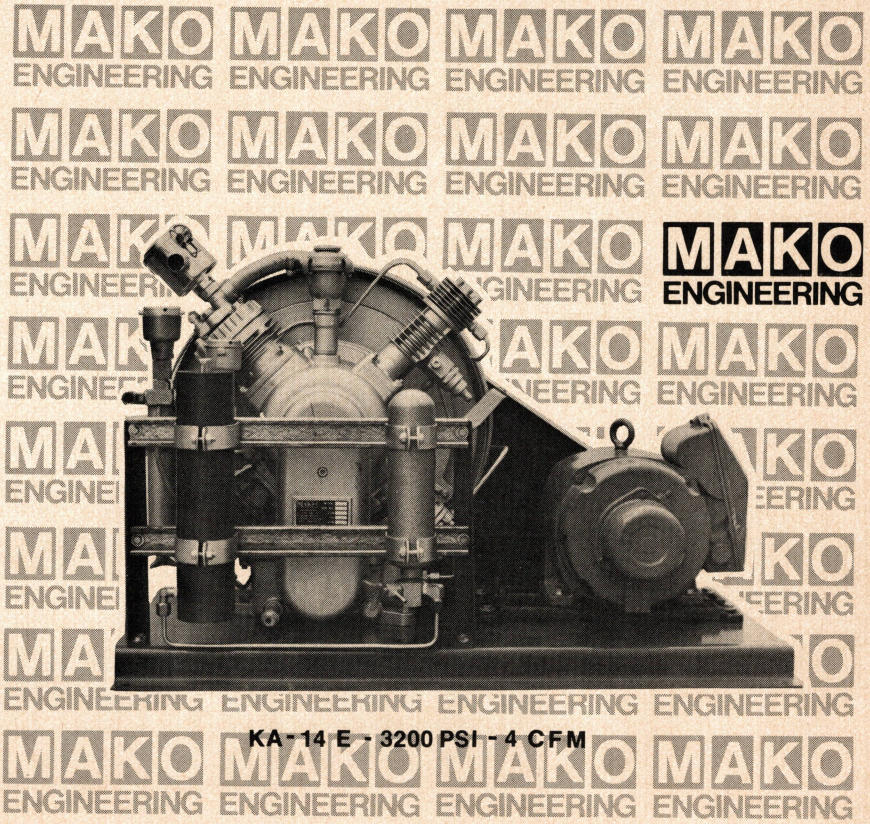
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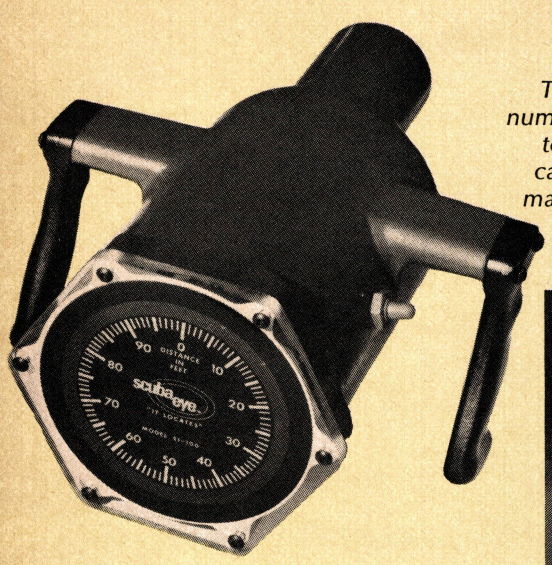


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SCUBA-EYE SONAR

By Jack McKenney

The Scuba-Eye Sonar can aid divers in numerous ways. For instance, it can be used to locate wrecks, to find and measure caves in underwater bluffs, or to locate marine life beyond the range of visibility.



photograph by Cornelius





photographs by Author

EXCLUSIVE SDM PRODUCT REPORT ON AN UNDERWATER EYE OPENER FOR DIVERS

Scuba-Eye is a unique machine which allows a diver to determine, while submerged, exactly how deep the bottom is from the diver's position, how far it is to the surface, and whether there is underwater life beyond the range of visibility. It can be used to locate and measure caves in underwater bluffs, and when a diver scans 360 degrees he can cover thousands of square feet.

Scuba-Eye is an underwater sonar device which transmits sound waves through the water. The sound waves rebound from solid objects, as far away as 200 feet, and indicate the distance on an illuminated, easy-to-read, five inch dial on the back of the machine. The sonar device is housed in an aluminum cast housing with two handles on it, and is held out in front of the diver in much the same way as a movie camera is. There is an on/off switch on the side of the unit, and a transducer is located in the end where the sound waves are emitted and received. Scuba-Eye is about a half pound positive in fresh water. By adding a couple of lead washers, it will also be about a half pound positive in salt water.

The scanner motor is driven by eight "C" cell batteries delivering 12 volts. When the unit is turned on, a constant light rapidly pulses at the zero-feet position. When the sound waves strike an underwater object and are returned, a second reading light appears at the 30 feet position, or whatever the depth or distance to the object, or bottom, may be. If a fish, or a number of fish, happen to swim between the bottom and the Scuba-Eye, additional blips will appear on the dial.

The transducer on Scuba-Eye is round and therefore sends out a cone shaped wave pattern. The greater the distance, the broader the cone. For example: at a distance of 100 feet the base of the cone will scan an area 17 feet in diameter. To determine the area being covered at any given depth, the diver simply divides the depth indicated on the sonar dial by six. At 40 feet, for instance, a circle six feet eight inches across is covered. The on/off control has three positions — off, high and low. The low power position is to be used for distances to 20 feet. For scanning greater distances the high power position is used.

There's an art to reading and interpreting the signals on the dial properly, but it's really quite simple to master. I tested the unit at Catalina Island in the kelp beds and over a sandy bottom. On the hard packed bottom the return signal was clear and bright, and just one signal was received by the unit. I aimed it horizontally and picked up a diver who had started to come in from about 100 feet away on a DPV (visibility was about 30 feet). As he moved in closer I could track him easily, the dial indicating 90, 80, 70 feet and so on. By keeping the Scuba-Eye on him, I could also determine in what direction he was traveling.

Different types of bottoms give different types of readings on Scuba-Eye's dial. For example: a lake bottom with a covering of weeds will produce many thin, pale signals. If, while traveling over a hard packed gravel, clay or sand bottom the bright signal suddenly widens, it means that the diver has started over a mud bottom. Mud absorbs the sound waves and returns a wide but weak signal. On a level bottom with scattered rocks or coral clumps the usual bottom signal will appear on the dial, but secondary signals will also indicate the tops and sides of the rocks and coral mounds.

If a diver doesn't have a depth indicator on his boat he can simply hold the Scuba-Eye over the side, switch it on and find out the depth of the water and even what type of bottom it is. The transducer must be in the water in order to register a reading. It's best to practice with the Scuba-Eye in clear water over various types of bottom in order to recognize the variance in readings when working in dirty water. When I pointed the unit down into the kelp beds from near the surface I got a solid bottom reading over the rocks, but also got a lot of secondary readings due to the kelp blades and stalks being picked up by the device.

Scuba-Eye opens up a lot of possibilities for the diver, especially those who dive in murky waters. And in searching for Great Lakes wrecks, the Scuba-Eye would be invaluable. More than once I have been as close as 100 feet from a wreck in Lake Huron and missed it completely. Scuba-Eye sells for $349.50, complete with batteries, and comes with a one year warranty and unconditional money-back guarantee. For more information check with your favorite dive shop or contact Fishmaster Products, Box 9635, Tulsa, Oklahoma 74107.

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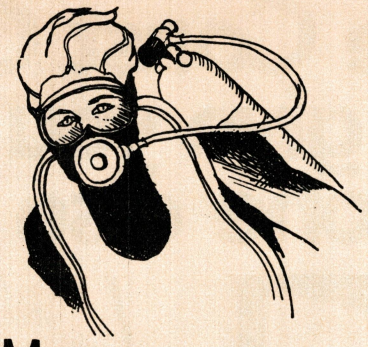


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Instruction

(Continued from Page 33)

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PADI Advanced Open Water Program. (Contact: Marty Bayerle, Brooklyn Divers, 2917 Ave. I, Brooklyn, N.Y. 11210)

July 7 & 14
Rick Frehsee Underwater Photo Course, Roatan, Honduras. (Contact: Kathy Taylor, Island Reef Safaris, 34 Ground Pine Rd., Wilton, Conn. 06897)

July 8
Professional Diving Instructor Course, Monterey, Calif. (Contact: Ed Brawley, 598 Foam St., Monterey, Calif. 93940)

July 19-20
YMCA Instructor Institute, Jonesboro, Ark. (Contact: Glenn Galtere, 2806 Harrisburg Rd., Jonesboro, Ark. 72401)

July 20-21
NAUI Instructor Qualification Programs: Columbia University; Rochester, New York; Providence R.I.; Manchester, New Hampshire; Albany, N.Y.; Hartford Conn.; Boston, Mass.; Worcester, Mass.; Portland, Me. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass.)

July 22
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

July 25 (8 sessions)
NAUI Advanced Diver Course, 7 p.m. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

July 27-August 4
NAUI Instructor Training Course, Peterborough, Ont., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ontario, Canada)

August 3-10
NAUI Instructor Training Course, Houston, Texas. (Contact: NAUI Southwest Branch, 2120 Peckham St., Houston, Texas 77019)

August 5-13
NAUI Extended Bio-Marine Exploration Seminar, San Diego, Calif. (Contact: NAUI Headquarters, 22803 Barton Rd., Colton, California 92324)

August 10-11
YMCA Instructor Institute, Jonesboro, Ark. (Contact: Glenn Galtere, 2806 Harrisburg Rd., Jonesboro, Ark. 72401)

August 10-18
NAUI Instructor Training Course, College Park, Md. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

August 17-24
NAUI Instructor Training Course, Chicago, Ill. (Contact: NAUI Central Branch, Box 14156, University Station, Minneapolis, Minn. 55414)

August 17 (5 weekends)
PADI Advanced Open Water Program. (Contact: Marty Bayerle, Brooklyn Divers, 2917 Ave. I, Brooklyn, N.Y. 11210)

August 19
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

August 24-25
NAUI High Altitude/Fresh Water Workshop, Lake Tahoe, Nev. (Contact: NAUI Pacific Branch, 816 Columbia St., Santa Cruz, California 95060)

August 24-September 1
NAUI Instructor Training Course, Vancouver, B.C., Canada. (Contact: NAUI Canada, 10 Monet St., Etobicoke, Ont., Canada)

August 26-30
NAUI Basic Bio-Marine Exploration Seminar, San Diego, Calif. (Contact: NAUI Headquarters, 22809 Barton Rd., Colton, California 92324)

August 31-September 8
NAUI Instructor Training Course, Veracruz, Mexico. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, California 90732)

September
NAUI Diving Instructors Vocational Education Seminar, Catalina Island, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)

September 15-20
NASDS Clinic, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

September 21
NAUI Diver Seminar, Boston, Mass. (Contact: NAUI Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass.)

September 21 (6 weekends)
PADI Senior Advanced Course. (Contact: Marty Bayerle, Brooklyn Divers, 2917 Ave. I, Brooklyn, N.Y. 11210)

September 21-22
YMCA Instructor Institute, Dallas, Texas. (Contact: D. Pat Ryan, 4332 Northaven Rd., Dallas, Texas 75229)

September 23
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

September 30-December 6
NASDS College, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

October 3
NAUI/NDA General Membership meeting, San Diego, Calif. (Contact: NAUI Hdqrs., 22809 Barton Rd., Colton (Grand Terrace), Calif. 92324)

October 7
Professional Diving Instructor Course, Monterey, Calif. (Contact: Ed Brawley, 598 Foam St., Monterey, Calif. 93940)

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UNDERWATER SCHOOLS OF AMERICA

"Oie, I smell oie," our Trukese boatman said in broken English. Everyone came to life as we all smelled the same skunk-like odor which often accompanies submerged wrecks as small drops of trapped oil finally escape and slowly make their way to the surface. The boatman steered upwind and we knew that at any moment the fathometer would start showing abruptly changing depths as we crossed over a large shipwreck.

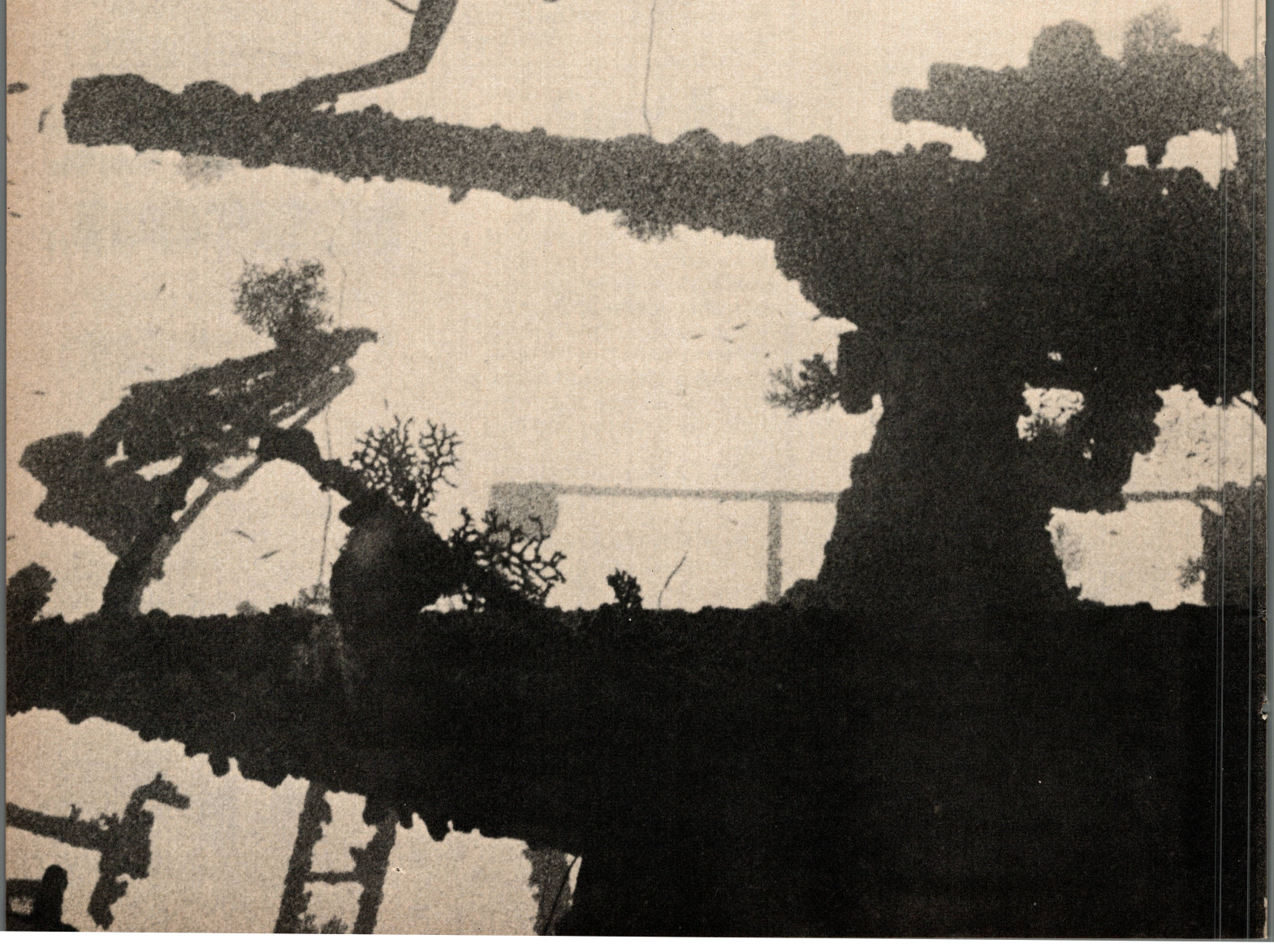
Nothing could be more stimulating to a wreck diver than to find a ship which has gone unseen, untouched and unexplored since it vanished from the surface many years before. Yet our dive team of five divers, who live and work at the Kwajalein Missile Range in the Marshall Islands, hoped to locate a number of forgotten wrecks during the four weeks we were to spend exploring Truk Lagoon. We had spent months researching the area before the trip, digging through copies of war documents, records and important battle photographs. As we had pieced the bits of information together, we had been constantly stimulated with questions: How would the wrecks look? What was their cargo? Why had none of them been found?

At last we were there, with choppy waves slapping against our small boat, and our eagerness was difficult to contain. We continued to sense the strong skunk-like smell, but it seemed like an eternity before Rudy Nemcovsky and John Bloomfield, who were watching the fathometer, reported abruptly changing returns from 80 to 150 feet. Turning sharply back over the location, a series of search patterns were initiated to determine the size of the object below us and how it lay. We were looking for the *Amagisan Maru*. The object below us was possibly 500 feet in length and was headed in the same direction the *Amagisan* had been before it sunk.

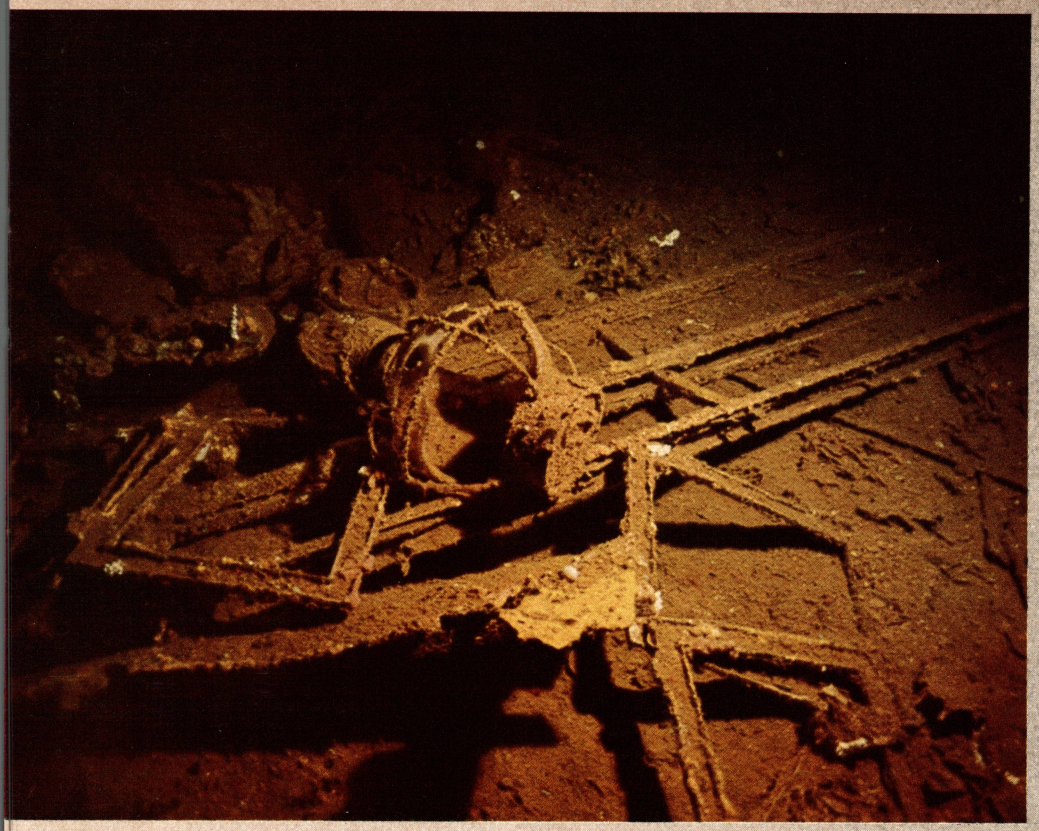
One last turn into the wind and our boat coasted to a stop as the Trukese line-handler cast the anchor. Herb Haymond and I were the first divers in the water, followed immediately by Rudy and John. Shoulder to shoulder, we swam swiftly straight down the anchor rope which disappeared into the infinite dark blue below us. At 60 feet we strained our eyes to see a faint image of an elongated object which bore the shape of a ship's side. At 80 feet we could see our anchor secured in the bridge area of a very large cargo ship listing to port 45 degrees.

The ship appeared to be in excellent condition except for the 30 years of submarine wear and tear. Swimming 200 feet toward the bow we could see the king posts and mast angling toward the surface. The 75mm bow gun was stowed neatly in place, pointing forward as if it had had no time to fire at the enemy before the doomed ship was fatally hit. On the starboard side of the bow, at 110 feet, the characters *Amagisan Maru* were clearly legible, thus removing all doubt as to the identity of the beautiful vessel now resting peacefully on the lagoon floor. The ship's port anchor was out and its chain hung from the hawsehole to the sand below, then turned across the lagoon floor and disappeared over a coral head into the endless blue-grey water.

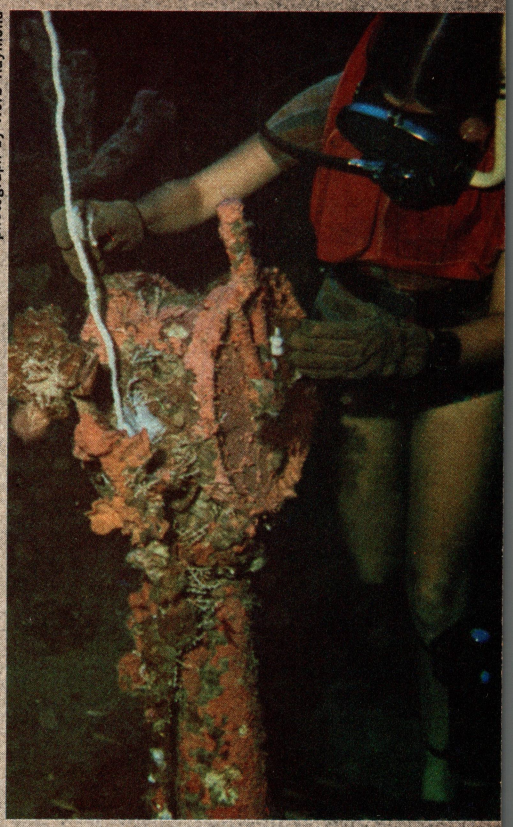
Swimming toward the stern, we saw a large torpedo hole which had blown up the ship's starboard side, penetrating the number three cargo hold just forward of the



photographs by Paul Tzimoulis



photograph by Herb Haymond



Above, a kerosene lamp rests in a compartment in the Aikoku Maru. *Below, the bow gun on* Amagisan Maru.

Denise Lynch on telegraph of Hokuyo Maru

TRUK'S MAGNIFICENT SEVEN

DIVERS DISCOVER NEW SHIPWRECKS IN W.W. II BATTLEGROUND

By Sam D. Redford



bridge. Stack markings of the Japanese shipping company Mitsui Bussan Kaisha were still apparent. The stern sloped into deeper water, but since our dive plan allowed us to descend no further, we swam over the aft cargo holds and stern area where it faded into the depths below. Later, we found the stern of the ship at 170 feet. All cargo holds appeared empty, although our exploration was only superficial. There is a chance some cargo could still be found.

The second shipwreck we looked for was in the Eten Anchorage. Here, we looked for a ship believed to be the *Seiko Maru,* a 5300 ton cargo ship which sank stern first after being torpedoed. War photographs show fires blazing violently in the stern area as the *Seiko Maru* disappeared below the heavily oiled and littered surface.

Little more than an hour after starting our methodical search pattern, we had successfully found and secured our anchor in the coral encrusted superstructure of the ship we had seen in the photograph. Like the *Amagisan,* this ship was relatively deep with the top of its bridge at 100 feet. Even though there appeared to be no cargo, this ship had some interesting features. On the bow at 120 feet, instead of a properly fitted deck gun, there was an old artillery field piece that stood on one feeble wooden spoke wheel with the other collapsed beneath. The muzzle was jammed through a roller chock port on the starboard side where it was positioned to fire at the enemy. How desperate those fighting men must have been to resort to such a crude form of defense!

Inside the second level of the bridge we found a large tile bathtub, a latrine area, and what was probably a galley or dining area. China displaying the ship's house flag markings was scattered along one bulkhead and stacked in what appeared to be a sink or cabinet. Positive identification of this ship was made from the unique insignia found on the china which belonged to the Japanese shipping company Dairen Kisen Kaisha. The *Seiko Maru* is listed as the only ship lost at Truk by this company.

During the next few days we made repeated exploratory and photographic dives on the newly found ships. Surface intervals were used to search for additional wrecks. Usually our second and, sometimes, third dives of each day were on one of the shallow, better known wrecks which we had not yet explored.

We found our third and fourth new wrecks at 220 feet, again in the Eten Anchorage, during our second week at Truk. Because of other diving commitments, however, exploratory dives on these ships were not made until Rudy and John had departed and our second diving team, Milt Lyens and Denise Lynch, had arrived.

Our first decompression dives were planned to explore and photograph the third ship which was found close to the *Seiko Maru.* Tentatively it had been identified as the *Hokuyo Maru,* a 4200 ton cargo ship 360 feet in length.

With our new diving team anxious to explore these newly discovered ships, we entered the water. At 140 feet we quickly determined the identity of one ship, as we photographed stack markings of the company known to have owned the *Hokuyo,* Kita Nippon Kisen Kaisha. There was an open bridge at 160 feet complete with two telegraphs, a heavily damaged compass and the helm with its wheel hung in an off-center fashion on part of its pedestal. The wheel's wooden spokes had long since deteriorated and disappeared. A loop antenna still maintained its position above the bridge but was slightly modified by a piece of horn coral. No cargo was observed on the ship's main decks at 185 feet, and open cargo holds were not explored because of their depth and lack of obvious cargo. The ship was in good condition and we could have been enticed to overstay our dive time and explore deeper and deeper; however, we all knew better and ascended to our first decompression stop on time. Because of the depth of the wreck it had less coral growth, and appeared cleaner than those vessels in shallower water.

The following day heavy wind and rain prevented diving activities in the unprotected Eten Anchorage. Therefore, we spent the day in the sheltered anchorage west of Uman Island searching for a fifth ship. We found a relatively small and heavily damaged vessel in the area where the *Taiho Maru* had reportedly sunk, but we could not confirm the identity of the ship. Denise and Milt were the first to dive on this ship and reported it lying in 145 feet of water on its port side with the bridge and bow area completely blown away. The intact stern had a mast and two cargo holds from which a large quantity of barrels had been dumped on the lagoon floor. The gross tonnage of the ship was estimated close to 3000 tons.

Two days later the weather cleared and we planned our second decompression dives to explore and photograph the fourth ship we had found a week and a half earlier. As the four of us entered the water together we were promptly met by a pair of two foot remoras. They seemed friendly enough, darting from one diver to the next, apparently not the least afraid. As we descended both of them attached themselves to Herb; one to his flotation vest and one to his tank. After a short ride they decided that their own mode of transportation was better.

As we passed the 110 foot mark we could see the ship's bow and foremast. Suddenly, we were startled by what we saw in the forward cargo hold. Still stacked in very neat rows were hundreds of spherical land mines, boxes of detonators and ammunition. It appeared that every available inch of space in this hold had been



National Archives photo

A photograph taken during the first raids on Truk show the Amagisan Maru *as it burned and sank on February 16, 1944. One of the two undamaged ships in center of the picture is believed to be the* Taiho Maru. *The photograph (far right) taken by a gunner from a plane from* Intrepid *show the* Aikoku Maru *as she exploded at 11:30 a.m. the same day. Seventeen years later, sport diver Milt Lyens passed through a loop antenna of the* Hokuyo Maru.

photograph by Sam Redford

crammed with some type of ordnance. It was frightening to consider what could have happened had we dropped our heavy anchor into this hold of delicate cargo. There were enough explosives there to cause a blast big enough to destroy all human and sea life within an eighth of a mile, and shake the entire lagoon.

The 75mm bow gun, pointed off the port bow, was in good condition. Covered with only light coral growth, it was not difficult to see the more refined features of the gun, such as the sight and ranging devices. We were amazed to find three armored tanks sitting near the second hold in relatively good condition. Probably because of their armament, 30 years of submersion had not appreciably changed the appearance of this equipment. Other than being covered with silt, they appeared still useable. The hatches were closed and our attempts to open them were in vain. We could only speculate how the inside would look.

The ship's second and third holds were filled to the top with half-tracks and trucks of all sizes and descriptions. Herb and I were exposing film as fast as our strobes could recharge and flashbulbs could be changed. How frustrating it is to know your air supply is rapidly becoming exhausted when you are only starting to explore and take pictures! Fifteen minutes were all we could expect from a tank of air and still have reserve for minor unforeseen contingencies.

The ship's bridge was missing, as though it had been lifted off, and its stack, with no apparent markings, had toppled onto the deck. This ship was tentatively identified as the *San Francisco Maru,* an old 5800 ton cargo ship. Its general configuration is common to several ships believed sunk in this area, but its location corresponds with the area in which the *San Francisco Maru* was reported.

It now appeared that the months of research, preparation and planning had paid off. Methodically searching, we had found five large ships where they were believed sunk. With this bit of success we were now ready to search for the largest and most beautiful ship remaining to be found in the Truk Lagoon — the *Aikoku Maru.* This ship sank in one of the deeper parts of the Eten Anchorage and we expected that it would be difficult to find.

Originally designed as a passenger carrying cargo ship, the 527 foot *Aikoku* was converted to a raiding cruiser during the first part of the war because of her size of 10,500 tons, twin screw maneuverability and speed of 21 knots. When the Japanese failed at raiding foreign shipping, her extra guns were removed and she was converted back to a transport four months before being sunk.

On the day Truk was raided, the *Aikoku* was anchored east of Dublon Island with her forward holds heavily loaded with munitions. Although a very desirable target to the American pilots, no one had effected appreciable damage until one pilot dropped a destructive load in the bow area of the ship. The explosion which resulted from detonating the explosive cargo was so great it destroyed the striking plane and its pilot. American flyers reported that the ship sank immediately. A Trukese I recently met saw the incident and confirmed this report. He added that all but four of the crew perished. Knowing this history, our group was very anxious to find the *Aikoku.*

A pleasantly calm day was chosen to conduct this search. Surprisingly, we only had to look 30 minutes before our fathometer had located a wreck in 230 feet of water. During our descent we thoroughly checked our equipment in preparation for the deep decompression dive ahead. The first recognizable object we saw was the enormous elliptical shaped stack with its markings, if they ever existed, hidden by the heavy growth of the sea. In continuing our slow descent, we had turned toward the bow when at 135 feet I saw the huge stack and superstructure loom above. Below, into depths further than visibility would permit, was a wall of rippled and twisted steel plates and girders.

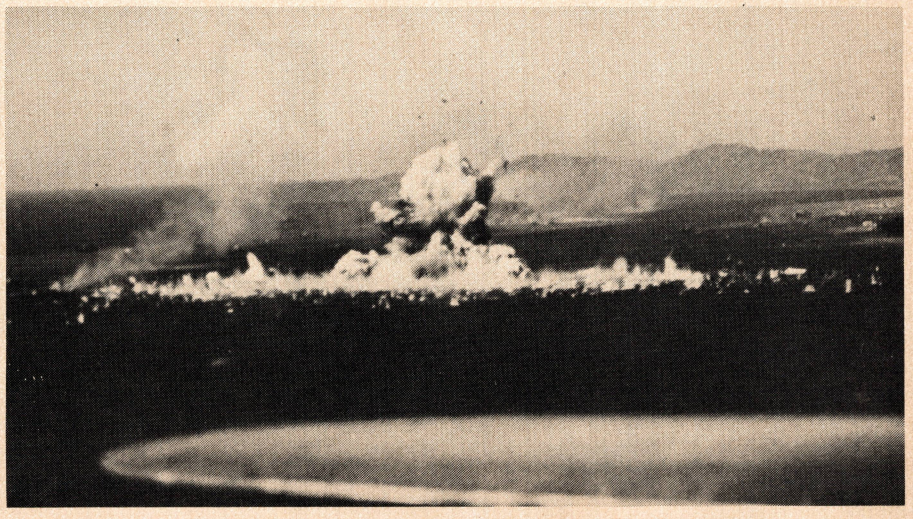
There was no doubt that this was the *Aikoku;* she was recognizable by her stack, remaining superstructure and effects of the explosion reported in Navy war records. The bombs had completely severed over 200 feet of this ship's sleek bow and, as expected, the gun platforms were bare and void of their weapons. The 75mm stern gun, however, was elevated to approximately 45 degrees and pointed off the port side, the same direction the fatal attacking aircraft had come from. For a moment I wondered whether the gunner had actually seen that particular plane approaching, or if he was firing at another plane as the final attack was made. This question will never be answered since both the gunner and pilot perished.

In deeper water and further out in the Eten Anchorage we located our seventh ship. It was tentatively identified as the *Reiyo Maru,* a 5400 ton cargo ship. We made one short verification dive and found the ship in poor condition, with masts gone and the bridge destroyed. The stack still stood among the debris.

There is little doubt that we could have located as many as seven more ships, including a couple of warships, had time permitted. During our stay in Truk Lagoon we had dived on a four-engine seaplane, 14 well known shipwrecks, and seven new ones, using almost 200 tanks of air. To discover and briefly explore these wrecks was indeed a thrill for us, but other divers will have equally exciting adventures exploring the areas we did not have time to see. Truk is, without doubt, a divers' paradise.



National Archives photo



The Shell Game



The Egg Cowrie

A diver sees a velvety-black creature, with tiny white and yellow dot-like papillae, living on soft coral. It appears to be a large humpbacked sea slug. He touches its back and the pitch-black mantle withdraws to reveal a glistening, snow-white porcelaneous shell. It is the egg shaped *Ovula ovum* Linnaeus, commonly known as the egg cowrie. It is sometimes called the fried egg cowrie, though that name seems quite inappropriate; its shape is a whole egg rather than of a flattened fried egg.

The pure white, highly polished shell contrasts with its brilliant chocolate to reddish-brown interior. There is no other shell with which it can be confused. Residing on the same yellow or darker soft corals it feeds on, it is found through the Indian and Pacific province from Madagascar and the Indian Ocean to the central Indo-Pacific, Western Australia, Queensland and New South Wales.

The egg cowrie is not a true cowrie. It is the largest member of the Ovulidae, a group related to the cowries and whose shells and anatomy resemble those of true cowries. This shell reaches a length of four and a half inches. Unlike the true cowrie, *Ovula ovum* has no teeth on the columella, or inner side of the aperture. Another member of the Ovulidae is *Cyphoma gibbosum* Linnaeus, known as the flamingo tongue, which is quite common on sea fans in the Caribbean.

Since early times, the cowrie shell has been respected by primitive races as a token of good fortune, a talisman against evil forces, and a charm to favor fertility. The beautiful egg cowrie has been adopted by native races for elaborate decorations of their huts, canoes and fishing nets. They have been used as ornaments for personal adornment in the form of armlets and necklaces; numerous examples of them may be seen in the ethnological halls of most of the world's museums. There is an age-old custom in which one of these shells is planted at the commencement of rows of crops to ensure a fertile harvest, a custom which is still followed by some of the peoples of the world today.

The egg cowrie is a study in contrasts. The living animal's velvety-black mantle contrasts with the shiny porcelain-like shell, and the exterior highly polished white shell with the deep but rich interior coloring. In either case, it is beautiful to look at.



When touched, the mantle withdraws to reveal the white shell.

Text by Twila Bratcher
Photography by Carl Roessler

At first, the egg cowrie appears to be a humpbacked sea slug.



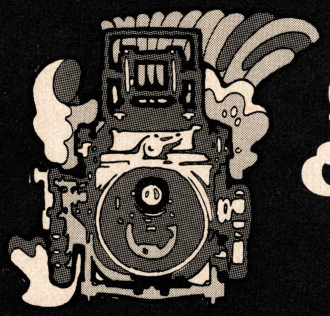
The lovely egg cowrie, OVULA OVUM Linnaeus



UNDERWATER PHOTOGRAPHY

Quick & Easy

PART XXXIX



Natural Light U/W Photography For Beginners



By Jim and Cathy Church

The purpose of this article is to introduce readers to the exciting world of natural light U/W photography.

Selecting a Camera — Selecting a camera involves a compromise between your needs and your pocketbook. For snapshots on a budget, simple cameras with fixed focus and exposure will yield acceptable pictures if you stay in bright, clear water. In turbid water, these simple cameras usually limit you to upward silhouettes against the brighter surface above.

Cameras with automatic exposure controls will work underwater if the exposure control does not depend on prolonged shutter speeds to cope with low-light situations. It is difficult to take sharp pictures with shutter speeds of 1/30 second or longer with a hand-held camera.

Manually adjustable cameras, with SLR viewfinding systems and exposure meter indicators visible in the viewfinder, offer the greatest ease of operation. But when the camera is encased in a housing, and your face is covered with a diving mask, the SLR viewing screen may not be easily seen. For best results a large viewing screen, such as those available for the Nikon F or Canon F-1, is needed.

Choosing Film — Fast films, such as Tri-X (ASA 400) for black and white, and High Speed Ektachrome (ASA 160) for color slides, are popular choices for natural light photography. Their high ASA ratings allow faster shutter speeds and higher numbered f-stops in dim, underwater light. In bright, clear water, Plus-X (ASA 125) is a good choice for black and white, and Ektachrome-X (ASA 64) for color slides. While these slower speed films require more light for an exposure, they yield finer grain and greater contrast than the faster films. For color prints, we favor using color slide film and having color prints made from the best slides. This costs less than shooting color negative film and having prints made from each exposure.

Estimating Exposure — Use an exposure meter. Be sure to aim the meter at the same angle that the camera will be aimed. When taking a reading near the surface, tilt the meter downward slightly to avoid false readings from the brighter, overhead light. With selenium-cell meters (those not requiring a battery), don't let the meter float in an upward position with the photo-cell aimed at the sun. This can cause the meter to give false readings when it is taken into dimmer, U/W light.

Estimating underwater exposures without a light meter is difficult. Assuming ideal conditions — bright, overhead sun and clear ocean water — begin with the basic exposure of f16 at the shutter speed that most closely matches your ASA rating. For example, with a Nikonos and High Speed Ektachrome (ASA 160), begin with f16 at 1/125 second (or the equivalent exposure of f22 at 1/60 second). In the first 10 feet of water open the lens by two more stops (from f16 to f8). Open by one more stop for each additional 10 feet down to about 50 feet. This is a rough rule of thumb only — there is no reliable substitute for an exposure meter. Dark subjects, early morning or late afternoon sun or turbid water will require even wider lens openings.

Avoid Excessive Movements — If you swim and move about excessively, you will accomplish three things. First, you will miss several good subjects because you haven't

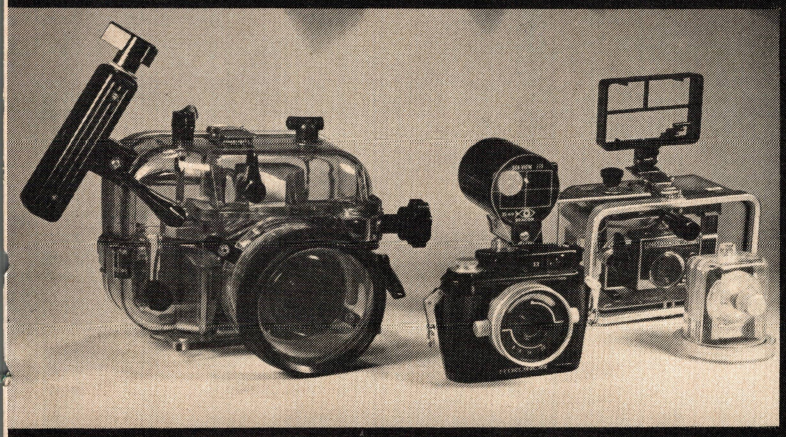


photograph by Jack McKenney

studied the area carefully. Second, you will probably scare the fish into hiding. Third, your fins will kick up bottom sediment to ruin any pictures you do take.

One popular method is to select an attractive background, set the camera for exposure and focus, and then just rest on the bottom and wait. After a few minutes, the fish that have been watching you from hiding will become accustomed to your presence and resume their business of searching for food. When they swim between you and your selected background — click — you've got your picture. This technique works especially well if you bring some bait along to feed them.

Another method, which avoids scaring your subject away, or kicking up sediment, is to glide in on your subject. For example, suppose you see a fish resting on a rock. Take a light meter reading off another rock of the same color and depth and preset the camera for exposure and minimum focused distance. Get back about ten feet and gain some "altitude" on him. Exhale to lose buoyancy (or adjust your BC unit), kick your fins gently to gain momentum, and slowly glide down to the fish with as little movement as possible. With practice, you can get within touching distance of fish.



photograph by Authors

Popular equipment for U/W photography: Nikon F camera housed in SLR case; Nikonos with Seacor viewfinder; Kodak X-45 in Ikelite housing; Sekonic L-86 light meter.

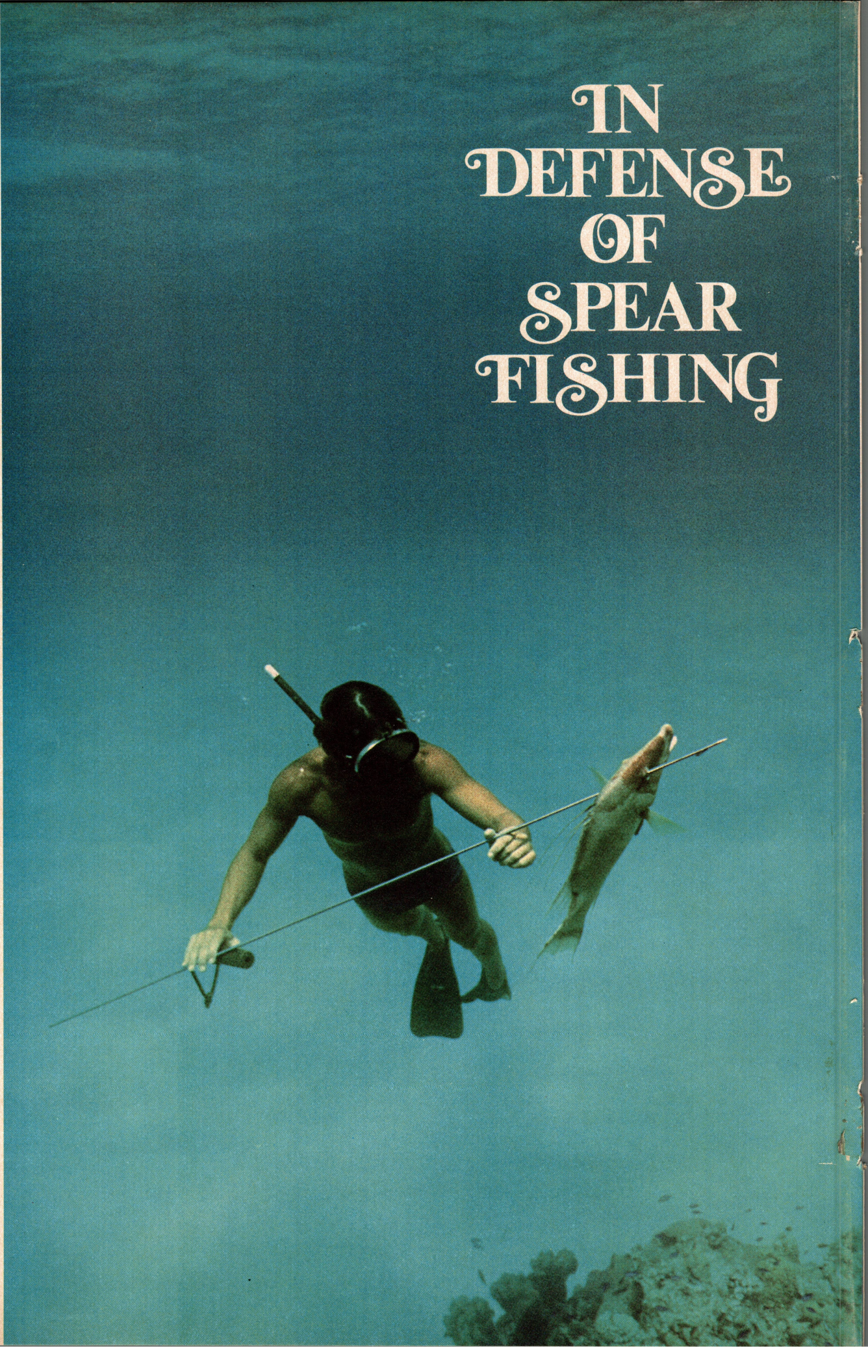
Shoot Close — Your best pictures will usually be taken at close distances. At long range, minute particles suspended in the water block the view from camera to subject. Even in the clearest water it is difficult to take really sharp pictures at distances greater than ten feet. With fixed-focus cameras, work at about four to five feet from the subject. The lens is not focused for closer distances, and the suspended particles cause loss of definition at longer distances. With adjustable cameras, work from the camera's minimum focused distance up to about four or five feet. Generally, the more turbid the water, the closer you should be to your subject.

Use Apparent Distances — When you look at an underwater object through the faceplate of your mask, the object appears to be larger and closer than it actually is. This magnification is caused by the bending (refraction) of light as it passes through the water / glass / air interfaces of the faceplate. This also happens at the interfaces of a flat lens port of a camera housing. The important point is that the camera behind a flat port will "see" the subject with the same magnification that your eye sees. For example, a subject actually four feet away will appear to be three feet away to both your eye and the camera lens. Therefore, camera should be focused for the "apparent distance" of three feet.

Upward Perspective—Trying to change your perspective — the way you view an underwater scene. As a diver, you are accustomed to swimming above the bottom and looking downward. As an underwater photographer, try getting as close to the bottom as possible and viewing objects with an upward perspective. Upward camera angles will help separate subjects from backgrounds.

Keep a Record — Keep a record of your shots — film, f-stop, shutter speed, subject distance, visibility and any special conditions. Do this on the site with a pencil and slate, or as soon as possible after leaving the water. You will learn from experience much more efficiently if you write down your photographic conditions and the results.

IN DEFENSE OF SPEAR FISHING



photograph by Paul Tzimoulis

By Gustav Dalla Valle

In 1961, I resigned as representative of the United States in the Underwater World Confederation. Up to that time I had been very active in trying to build up a world diving organization and, here in the United States, an American organization. Since then I have stepped completely out of any social activities in the United States and around the world. I have been too busy manufacturing diving equipment and the little free time I have I invest in my still-favorite sports: sport diving and spearfishing. Recent events have led me back into the headlines. I do this against my wishes, but the reasons to take a stand are so important I have no other choice.

My first underwater experience goes back to before World War II, and since then I have seen many attacks against the sport of spearfishing. Our first strong opposition was from the fishing tackle people. They complained that we disturbed their favorite sport. Then we had the Parks and Recreation people who didn't want us fishing from the beaches. There have been many others. So far we have survived very gracefully.

This time the attack, a strong one, comes from a member of our family. A movement initiated by a strong and powerful personality in the diving world is trying to put the sport of spearfishing outside the law. That leaves me no other choice than to take up my pen and fight for the survival of my favorite sport as I have done in the past.

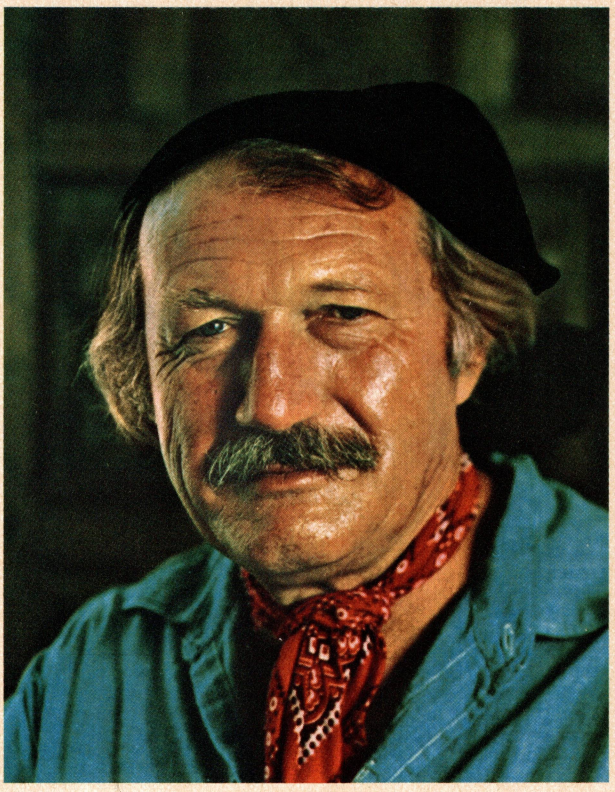
I think the most important defense of spearfishing is the history of diving itself. The sport diving activities we have today started 40 years ago when a group of people decided that the best way to get their fish was not to use a line, but to go underwater and choose and take their own fish. That was how the sport of spearfishing started, and that was the start of everything. Everyone of any notoriety in the sport of diving today passed through that. They started as spearfishermen, and when I say everybody, I mean literally everybody who is in the "Who's Who" of diving.

All diving companies that started in the beginning started by selling spearfishing equipment only. As a matter of fact a long time ago, in 1948, my company was named "The Spearfisherman." The same magazine which is so nice to print my story, SKIN DIVER, started as a magazine strictly for spearfishermen and for the first four, five and six years the only thing readers saw were spearfishing pictures. As a matter of fact, in December, 1952, SKIN DIVER printed one of my underwater spearfishing pictures on its cover.

That was in the United States, but the same was true around the world. We all worked hard, we fought hard and we spearfished hard. We were proud of our new sport and we built up what is known as the sport of diving.

Then scuba diving started. In the beginning we skin divers looked upon this new brand of brothers in a friendly way, calling them "bubble divers." Finally these "bubble divers" got really big and we all turned out to be "bubble divers." Then the confusion started.

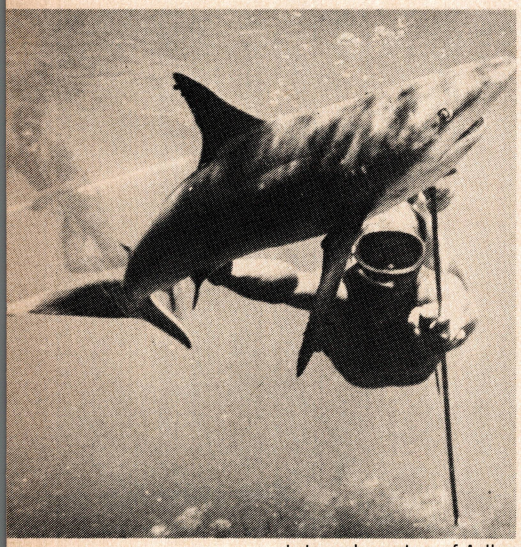
Scuba diving grew rapidly and was transformed from a back-yard industry to a legitimate business; in the end it was the sport of scuba diving, with its new horizons, which legitimized our sport of spearfishing and gave it the necessary boost to make it what it is



ABOUT THE AUTHOR: Gustav Dalla Valle, President of Under Sea Industries, Inc., has attained international recognition as one of the foremost pioneers of diving equipment for both United States and Europe. His 40 years of diving activity includes diving in all parts of the world, establishing the world's first spearfishing school, organizing Diving Tours, Inc., producing underwater television and movies as well as writing for the major American and European diving publications. Dalla Valle has brought to the American market many new diving products. Through his international experience, he has enlisted, for Scubapro, the services of leading American and European underwater scientists to continue to provide the American diver with an ever increasing supply of technically advanced diving products.



photographs by Paul Tzimoulis



photograph courtesy of Author

Being able to free dive to 90 feet, play games with a fish, outsmart him, catch him and take him to the surface is one of the most complete sports existing in the world. But competition should be eliminated, and the type of guns should be controlled so that bazooka-type guns would be outlawed.



today. Unfortunately, scuba diving got so big that it slowly, slowly swallowed up the spearfishermen, resulting in a new, mixed breed of scuba/skin diver/spearfishermen. Skin divers and spearfishermen, as individuals, have slowly disappeared. That is the big problem and that is what I want to do here — to give to Caesar what is Caesar's and to God what is God's.

Why now do some of our brother scuba divers want to kill the sport of spearfishing? They say that we are responsible for the scarcity and sometimes the complete disappearance of many fish, and as such are a menace to the ecology. Ecology is a big word today; everybody tries to exploit it and often a new industry is born, as they say, to protect the ecology. A new flag has been created and under this flag some people are trying to reach their own personal goals which really have nothing to do with the true goals of ecology. Of course I like ecology, and who doesn't? But I also like spearfishing. A big flag is held up around the world today: "Let's save the sea." I have only one small flag which says: "Let's save the sea and save the sport of spearfishing," because one is not in opposition to the other.

They say that we are responsible for the destruction of the fish. The reality is that the difference in amount of fish caught by spearfishermen as opposed to the amount caught by commercial fishermen is tremendous. I don't have worldwide figures to back this statement up, but I can give some French figures as an example.

In 1971, in France, commercial

fishermen caught 537,530 tons of fish including 110,200 tons offshore and 31,853 tons of shellfish. In the same year, during the French spearfishing championship, 76 spearfishermen caught 2154 pounds of fish during 10 hours of competition, which is 28 pounds per person in 10 hours — just a little less than three pounds for each hour. The conclusion is obvious: in one year a large fishing boat can catch more fish than all the spearfishermen in France can catch all year long.

Concerning the line fishermen, who are 40 times more numerous than spearfishermen (we still talk only about France): in 1972 during the line fishing championship, 162 line fishermen caught 7884 fish for a total of 5500 pounds. These figures show that spearfishing is not really the reason for the disappearance of the fish. The reason for their scarcity and disappearance is that there is a lot of fishing done all around the world and nobody worries about repopulating the seas as they do in lakes and rivers. What would happen on land if we kept eating chicken and beef and never worried about raising poultry or cattle?

Another reason for the scarcity of fish, especially in Europe, is that too many systems of commercial fishing are legal; fishing with lights at night, trawling near the shore. (Trawling is certainly not a very ecological type of fishing because it scratches the bottom of the sea and really changes the sea life on the ocean floor.) But especially destructive is fishing with dynamite, and unfortunately the more scarce the fish are the more often this cruel system is used. One simple bomb kills millions of small fish and billions of eggs and the law is, more or less, tolerant of it. And in the end, what is not killed or destroyed by this, is killed by pollution.

Of course, we spearfishermen are in some parts responsible too, but certainly not enough to justify the killing of such a beautiful sport; a sport which is more demanding than any other sport I know. Being able to free dive, go to 90 feet, play games with the fish, outsmart him, catch him and take him to the surface is one of the most complete sports existing in the world. And the fish has his chance too. The fish is not intelligent and doesn't have a weapon, but he is in his own environment; he can swim, hide, camouflage himself and it is a fair chance for both — it is a 50/50 chance.

Last December I was in the Bahamas enjoying my favorite pastime when one day, free diving of course, I found a grouper weighing 35 or 40 pounds, at 40 feet. He was inside a cave in a reef not far from the beach. Immediately I tried to catch him, but he was a smart one and we played "hide and seek" between four or five holes, appearing from one, disappearing into another and so on. After one hour I gave up because he was outsmarting me. But the second day I took my rubber boat and there I was, in the same place to try again. This time it was not one hour, it was longer. I never really checked the exact time but I know it was noon when I got back.

On the third day at dawn, which is the best time to catch fish, there I was with my small rubber boat, all by myself, more determined than ever to arrive at some conclusion. But that day too, I came back empty-handed. At night I was dreaming about catching that fish, and for ten solid days there I was at that reef with my small boat diving up and down, up and down God only knows how many times. For ten days the fish had a ball and I had a first-class nervous breakdown.

Fortunately, my vacation ended and I left. Actually, my body left because my heart was, and is, still there at that reef with that grouper near that small island in the Bahamas. That is the story of the old man and the sea which Hemingway described so well in his beautiful novel.

Hunting is in the blood of man and as long as it is done with a fair chance to the game there is nothing wrong with it. And if it is wrong, let's all turn vegetarians and stop eating meat, any type of meat, and not be hypocrites saying that it's okay to eat a chicken but to shoot a fish to eat is wrong. If killing is bad, any kind of killing is bad, not only the killing done by spearfishermen. And I think it is much more heroic for the fish to die after playing games with the spearfishermen than to be caught by a huge commercial fishing machine where his chances are zero. I consider myself a pretty good spearfisherman, yet my average is one to ten which means that nine out of ten fish are able to get away.

We should also remember that spearfishing, as well as being a sport, is a system for providing good food for the diver and his family. Personally, I never consider killing fish for the pleasure of killing. When I am spearfishing, I choose the right type of fish and I think of how good it will be when it is greeted with a good, cool glass of white wine. These are very important things which should never be forgotten.

Going back to my original point, as I said, in the beginning we were making all our own equipment, we caught our own fish, we cooked them and we ate them. We weren't too anxious to make a big sport or big industry or big business out of our hobby. We were happy, and in some ways jealous, of our new discovery and we tried to keep it to ourselves. All around the world it was the same — a very close community.

Then things changed. More people were getting interested in this wonderful sport, more people need more equipment, and so small manufacturers started here and in Europe and consequently some promotion for the industry and public relations became necessary. So we started spearfishing competition, which at that time was very well accepted and helped the sport grow in popularity. I was involved in it from the beginning and I remember that no matter if the national championships were held in Long Island or Laguna Beach we always had a large number of spectators and a big follow-up afterwards and the newspapers talked about it.

At the time, spearfishing competition was necessary to make our existence known. In fact, I was responsible, along with Jim Christiansen, for giving the United States the only World Champion title it ever had with Terry Lentz in Malta. Then slowly, slowly, competition started losing its initial interest especially because in France, Italy and Spain, unscrupulous commercial companies exploited the spearfishing competitions and the athletes were paid by them. It was not sport competition anymore, but commercial competition. The winning product was shown in every form of advertising by the company and that was the end of competition for me. As I said, competition has served its purpose, but now it should be eliminated.

I have nothing against some sort of control of the quantity and size of fish caught by spearfishermen as line fishermen are controlled. For that matter, the Fish and Game departments do an excellent job in controlling spearfishing. Of course, if a species is an endangered species we all should be happy to cooperate to

(Continued on Page 84)

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photographs by Paul Tzimoulis





photographs by Jack McKenney





e CORAL GOUGERS

By Bill Barada

A magnificent stand of pillar coral once towered above the surrounding reef, its exquisite Gothic spires and pinnacles as outstanding in this lovely submarine garden as an altar in a cathedral. Pillar corals are comparatively rare in the Florida Keys, and the breathtaking beauty of this specimen off Marathon had made it a landmark, admired and revered by divers familiar with the area.

The coral cathedral is gone now. Smashed loose by blasting gelatin and derricked out of the water, it was hauled away and sold to the highest bidder. The bleached white skeleton now decorates some private swimming pool or garden, a victim of the rapidly expanding popularity of coral as decorative pieces.

Evidence of the growing market for coral can be seen in souvenir and aquarium shops all across the world. Large quantities of artistically arranged coral trinkets are showing up in jewelry stores, in department stores, as interior decorations sold in furniture stores, and as landscape pieces in garden shops. In popular diving areas, such as the Florida Keys, coral stands are sprouting like mushrooms.

It's easy to get into this business. The only investment needed is scuba gear and a boat. Sales can be made through wholesale supply houses, to individual aquarium and souvenir shops, or by setting up one's own stand. This often consists of nothing more than a display board or lean-to, similiar to the familiar shacks used for selling home-grown vegetables. Unlike produce, however, coral skeletons do not spoil or grow old, so there is practically no risk. The price of individual specimens is an indication of demand. In the spring of 1973, an operator on Key Largo told me he was getting $75 each for 25 pound specimens of elkhorn coral, and much higher prices for slower growing species such as brain, star and pillar corals.

Prices are also an indication of the amount of pressure coral collecting is exerting on the reefs. When divers begin to describe individual coral specimens in terms of dollars and cents and visualize a living reef as bristling with price tags, many will lie awake nights dreaming up schemes to cash in on the bonanza. This is verified by the truckloads and boatloads of coral being hauled away from the Florida Keys and other easily accessible areas. Residents of Big Pine Key, Florida, are outraged by the routine raids on beautiful Looe Key which lies nine miles offshore. They give first-hand, eyewitness descriptions of barges anchored over the reef and divers armed with sledges and crowbars attacking the coral. Truckloads of coral are almost as common on the Overseas Highway as truckloads of lumber, and at least

The beautiful coral reef above has become of major economic importance to the natives on nearby Palau Island in the South Pacific. Tourist thrill at the fantastic shapes and colors of the coral, and at the abundance of marine life that thrives on the reef. All this is lost when the coral is killed and taken home to gather dust in someone's den. The coral loses all color, fish their home, and the world loses one of its richest resources.



photograph by Bill Barada



The bleached bones of a once-beautiful coral reef are now on display at a Florida roadside stand. It's easy to get into this business: the only investment needed is scuba gear and a boat. The tragedy is that living corals don't regenerate themselves quickly, as other typical roadside produce does.

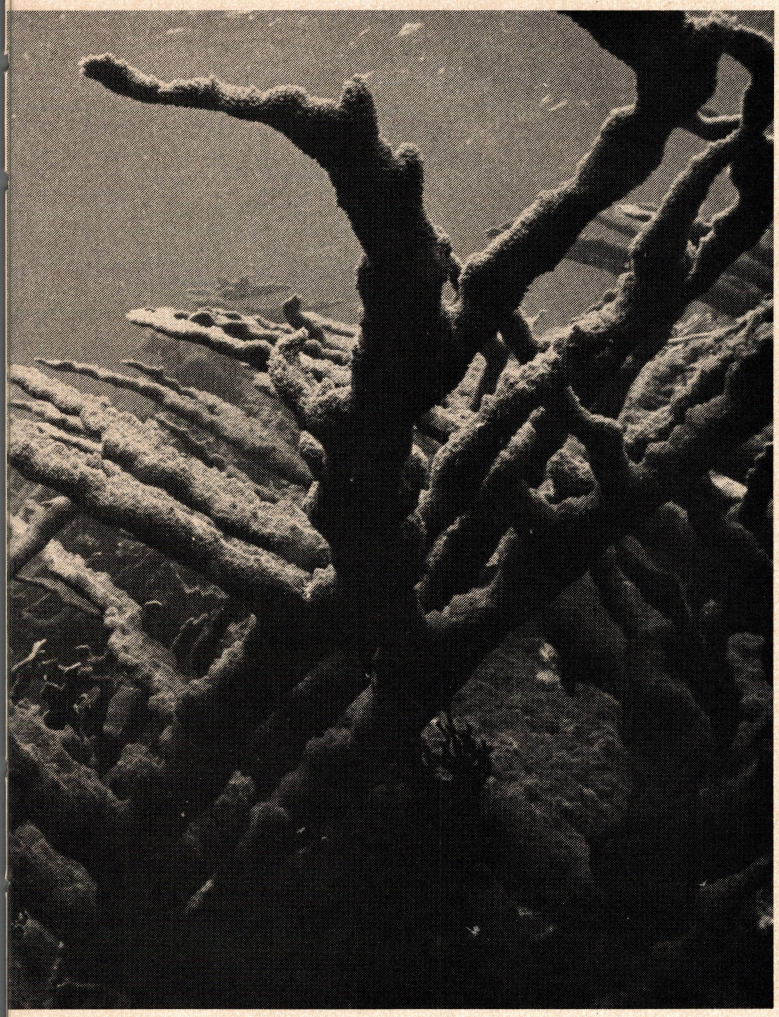
one collector has been found guilty of using blasting gelatin for removing large specimens.

Strange as it may seem, it is perfectly legal to dynamite coral in Florida. The only restriction in the law is that dynamite cannot be used for taking food fish. Thus the Marine Patrol of the Department of Natural Resources, even if aware of coral dynamiting, is helpless to stop the practice unless they can prove that fish are being killed. Also, except for Pennekamp Park and Biscayne National Monument, Florida had no laws regulating coral collecting until October, 1973. Anybody, at any time, could haul away as much as he could handle. Naturally, the most beautiful and most perfect specimens were the first to go, including huge 200 year old stands of coral which weighed several tons. However, increasing demand made selective collecting unnecessary and large sections of reef have completely disappeared, wiped as clean as if scraped and cleared by a bulldozer.

In 1973, the publicity generated by the donneybrook over Pennekamp Park (SDM, Feb., Mar., April 1973) brought attention to the problem and created a public outcry. Three separate bills regulating coral collecting were introduced in the Florida legislature. Two of these simply legalized commercial harvesting by requiring a $100 license. The third, supported by the Department of Natural Resources and the Florida Skin Diver's Association, attempted to restrict commercial collecting by limiting the amount that could be taken. The bill which was finally passed regulates only three species of hard corals — elkhorn, staghorn and pillar, plus two gorgonian corals— flabellum and ventalina. The limit is ten pieces or ten pounds per person collected while in or on the water. The quantity possessed on land, or the number of pieces collected during the day, are not regulated. Thus, coral can still be taken commercially; the operator will only have to make more trips, or hire more divers, or promote the sale of unregulated species.

Florida is a microcosm of a worldwide problem. In researching information for this article I contacted a variety of sources, from the Pacific to the Mediterranean, including marine scientists, specimen collectors, tour guides, resort operators and other specialists. Apparently Florida is the first area to adopt any kind of legislation governing coral collecting. Except for a few marine reserves and U/W parks, my informants could name no other place where plundering reefs for profit is regulated.

Florida's coral collecting legislation may be a step in the right direction. But, the law is based on political reaction, not sound scientific evidence, and it raises more questions than it answers. In fact, a



photograph by Paul Tzimoulis

number of marine scientists suggest that the protection of selected species may actually do more harm than good.

Coral collecting is an extremely hot political issue and any suggestion of restrictive regulations generates a storm of protests which confuse the primary purpose of protecting the reefs. A few examples illustrate the wide divergence of opinion on this controversial subject.

Bob Straughan of Coral Reef Exhibits, a dedicated and outspoken conservationist, states that 99.9 percent of all coral sold in Florida and the United States is imported from the Pacific. This opinion is supported by Bob Brown, another marine specimen collector and wholesaler in Marathon. Both men claim that Pacific corals are cheaper and prettier than Caribbean corals, so there is little reason to handle the local varieties. However, these men form their opinions from the aquarium trade, which Straughan believes is the primary outlet for coral sales. When asked about the coral shops springing up along the Keys, Straughan said he believes they are a good idea because coral is a product of the Keys and tourists who are unable to see corals underwater should be permitted to take home a few pieces. Straughan is also convinced that only one sport diver out of 1000 collects coral and tourist divers are no threat to reefs.

Other specimen collectors and many skin diving organizations are in agreement with Straughan in the opinion that sport diving and the limited commercial harvesting for tourists is not harming the reefs. Others, such as some dive shops, conservation organizations and residents in the Keys disagree. These people cite the truckloads and bargeloads of coral leaving the Keys as evidence that market conditions have changed drastically. Key divers can also point out damaged areas of reef which they attribute strictly to uncontrolled harvesting.

Since the primary concern is protection of the reefs, I asked marine scientists specializing in coral reef ecology to give us the benefit of their opinions. Their answers to my questions shed a great deal of light on the subject and give anybody who is tempted to take home a beautiful piece of coral a lot of food for thought.

How important are rates of growth to the ability of corals to repair damage due to harvesting?

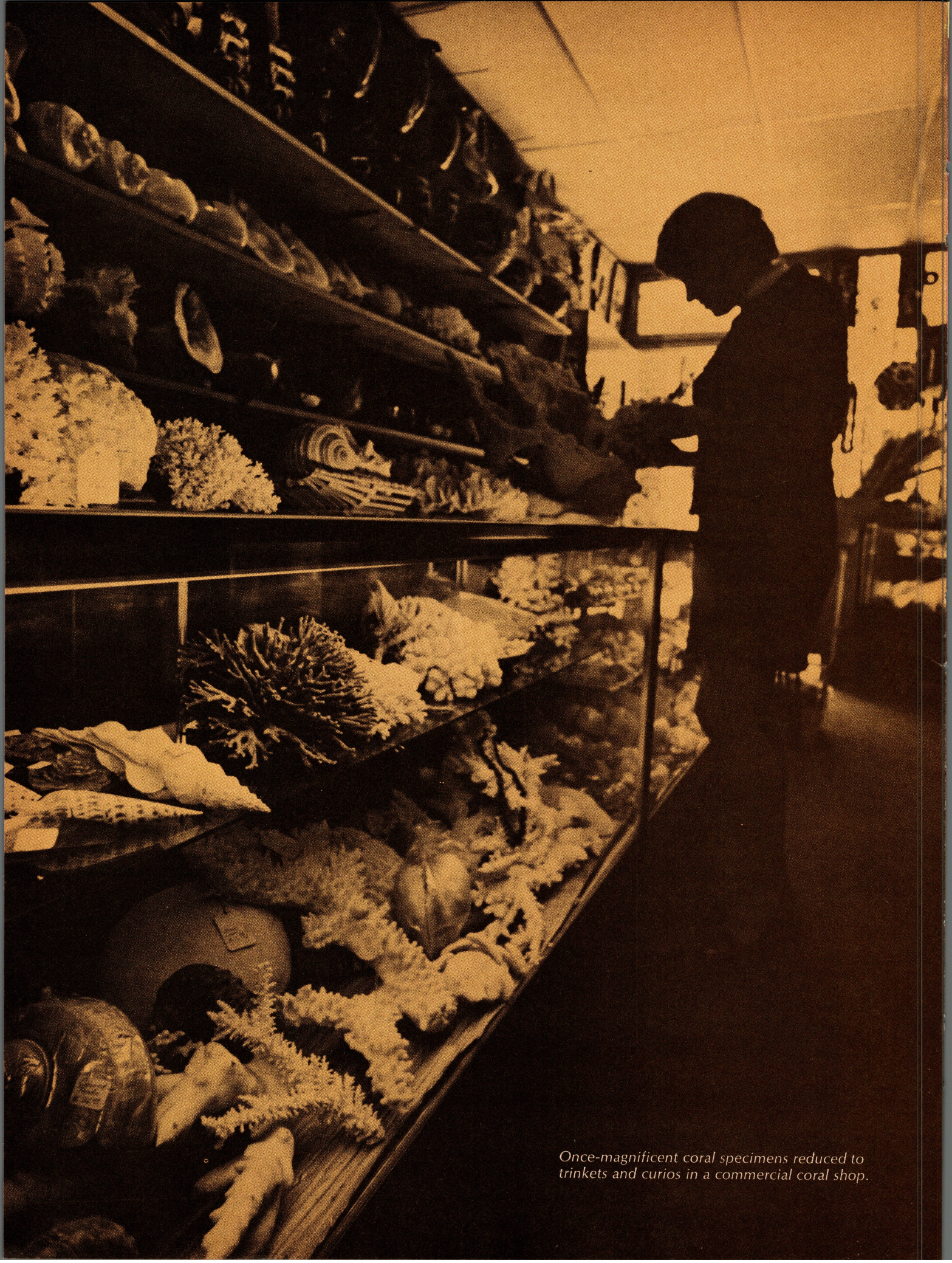
The rate of growth is very important to recovery, but other factors are equally important. The shallow water branching corals, such as staghorn and elkhorn, are the fastest growing, with growth rates estimated from one to eight inches per year, depending on the area and specific conditions. Mound corals, such as brain and star, are much slower, growing at about one-half inch per year. If a piece of branching coral is broken off, the remaining coral can repair the break and growth can continue. However, regeneration is never assured because algae and other growths may encrust the wound and prevent healing.

Dr. Eugene Shinn of the Shell Oil Company Environmental Conservation Department states that if only pieces of fast growing coral are taken, the damage would probably be repaired in less than three years. Dr. R. E. Johannes of the University of Georgia Department of Zoology states that, where reefs are stressed by sediments or sewage, excessive algal growth often occurs and makes it more difficult for corals to repair damage. Dr. John C. Ogden of the West Indies Laboratory states that other species may compete with corals for space made available by harvesting, or that wave patterns may be changed in a manner to preclude generation. Dr. Shinn's studies of Florida's reefs after hurricane damage showed that the reefs made a rapid recovery. Dr. Ogden cited studies of damage to the British Honduras reef after the 1962 hurricane which showed little sign of recovery even four years later.

These statements are not as contradictory as they may sound. All scientists agreed that collecting often removes entire colonies, leaving no "seed" for fast recovery. In this case recovery depends upon resettlement from larvae drifting in from other areas. If the substrate is receptive, recovery could take place in about five to ten years for fast growing corals. But, there is no assurance the larvae will resettle in the cleared area. The conditions which permitted the original coral growth may have changed in the intervening years and the harvested area could become just another one of the familiar bare spots in the reef tract.

Dr. Shinn states that the broken pieces scattered about by a hurricane act as "seed" which keeps on growing and permits fast recovery. However, if the wave patterns or currents have changed, of if other conditions are unfavorable, recovery could take many years, and perhaps the reefs could never regenerate.

Dr. Ogden cites the crown of thorns starfish as a "natural harvesting machine." The coral it damages



Once-magnificent coral specimens reduced to trinkets and curios in a commercial coral shop.

often becomes overgrown by sponges or replaced by algae before the coral can recover. Excessive harvesting by starfish has devastated many miles of Pacific reefs, of which many never recover.

Harvesting of slow growing mound corals requires removal of the entire colony and takes many, many years for recolonization from larvae to take place. Since the smaller specimens are in greatest demand, intensive harvesting eliminates the young colonies just getting started and could cause drastic depletion or annihilation of some of these species.

From this evidence it appears that Florida's new law which protects fast growing, branching corals, may concentrate collecting pressure on slower growing mound corals which are more vulnerable to depletion.

How important are shallow water branching corals to the entire reef structure?

There is general agreement that the branching corals — elkhorn, staghorn and moosehorn — originally laid down the framework which formed the foundation for today's reefs. These corals can withstand the buffeting of waves and tides and expand seaward, forming the familiar spurs, or fingers, which extend into deep water. Dr. Shinn examined the internal composition of reef spurs in Florida and found that they were composed almost entirely of the skeletons of crowded "in-place" moosehorn. Open spaces were filled in with the debris and skeletons of other organisms. Thus the entire reef flat was at one time a living colony of branching moosehorn coral.

Dr. Dennis Taylor of the University of Miami Marine Laboratory states that the stability of the upper reef is very important to the structure of the reef because branching corals form the framework which deep water corals generally consolidate and strengthen.

Dr. Ogden says that the branching corals provide the habitat diversity which enables the myriad species to live on the reefs. They also act as baffles, cutting down the force of waves so other more delicate forms may exist.

On the other hand, Dr. Johannes states that the structure on which present living corals sit is generally hundreds of years old, and in most cases it would take hundreds of years, or more, for the integrity of the reef substructure to weaken as a result of removal of the living corals on top of it. He says that, unless pollution is intense, coralline algae and other calcareous forms would form a protective veneer, even in the absence of corals.

This evidence indicates that, although there is some difference of opinion that elimination of branching corals would cause disintegration of the reef structure, there is little doubt that these corals are vitally important to continued growth of the reef, and to the survival of a number of creatures in the reef community.

Also, it is generally agreed that extensive harvesting of deep water species such as black, red and pink corals is a risky gamble because, at present, nobody knows the role these may play in holding the structure together.

In your opinion, could the harvesting of a particular species make remaining corals more susceptible to disease or other damage?

Dr. Ogden states, "We have made observations indicating that the 'wound' formed when a coral is broken off can lead to the rapid growth of marine borers, sponges, and algae in the new substrate created by the break. These can overgrow the rest of the colony, leading to its destruction. Breaking off parts of a colony will also make the whole colony less resistant to wave action."

Dr. Shinn states, "I don't believe that harvesting of one species will adversely affect another species nearby. Recent work by Dr. Lang in Jamaica has shown that there is fierce competition between various coral species. Removing one species may only make conditions more favorable for other species."

Others state that the removal of coral makes remaining species more vulnerable because the pressure from predators is transferred and concentrated on those that are left. They also state that there is no way to predict what type of organism will replace a coral colony that is removed. Often in nature such vacancies are occupied by undesirable organisms.

A renewable resource is usually harvested according to sustained yield. In your opinion, should corals be considered a renewable resource by this definition, or should harvest be confined to "crops" of fish, shellfish and other marine life which are reef-dependent?

Dr. Johannes believes that corals may be looked upon as a renewable resource, just like trees. However, he would be happier if people were content to enjoy them only in the living state.

Dr. Shinn states, "If harvesting is to be allowed, then, probably, it is best to allow it only in the least accessible areas. I think it should also be restricted to the branching corals which are the fastest growing."

Dr. James Maragos of the Hawaii Institute of Marine Biology believes that all natural ecosystems must have some capacity to maintain losses, whether natural or otherwise. Corals are slow growing compared to other systems and he feels we need more information before we can say how much can safely be removed.

Dr. Taylor says he is very reluctant to encourage any type of coral harvesting, especially in Florida which is at the northern limits of coral growth. He cites visible damage to a number of easily accessible Florida reefs which he attributes to excessive collecting.

Others state that there is absolutely no reason for commercial collection of corals. They are *not* important to the economy after they are removed from the water — but are vitally important to the economy if left right where they are. One scientist suggested that shops could sell plastic replicas as readily as dead coral skeletons.

Do we now have enough information about coral reef ecology to manage this resource properly?

A unanimous "NO!"

The questioning brought out some interesting observations regarding the value of coral reefs as a resource. Dr. Shinn stated that the live coral reefs are mainly of aesthetic value because commercial "meat" fish such as grouper are far more numerous around dead reefs.

Other marine scientists emphatically disagree. They point out that the reefs are not only vital as shelter and food for marine life, they also form a natural barrier, or breakwater, which protects the land and inshore nursery grounds from the violence of tropical storms and hurricanes. A number of studies have indicated that the coral reefs around Pacific and Caribbean islands are some of the most productive ecosystems in the world.

Also, Dr. Ogden states that the laboratory in the Virgin Islands has had to institute coral collecting guidelines because damage from modest personal collecting was producing scars on the reefs. He states, "Our reefs simply will not stand up to indiscriminate collecting by increased numbers of divers, let alone commercial harvesting."

He believes that legislation is needed to protect the

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photograph by Jack McKenney

News Briefs

By Hillary Hauser

MARX MAPS CITY

Marine archaeologist, treasure expert and adventurer Bob Marx recently surveyed the sunken remains of a city which went down in an earthquake in 1687 — five years before Port Royal. The city, located off the Dutch island of St. Eustatius in the Caribbean, was a pirate and smuggler center at the time it went down. About 900 buildings were lost in the sea, along with a vast amount of goods and treasure. On the preliminary trip Marx worked for the Dutch government to map the sunken remains of the city. He also brought in a sampling collection of artifacts to show the potential of the site. Also discovered on the trip was an early 18th century shipwreck near the site and Marx also raised two cannon and other artifacts for the local museum on the island. Marx will return with sub-bottom profiling sonar to locate other ruins which are buried beneath the sand.

SWEDISH FIND

The discovery of a shipwreck outside Stockholm by two men and a girl diver may rival the historic find of the *Vasa*, a huge sailing ship brought up from the bottom of the Stockholm Harbor a year ago. The latest wreck is believed to be a two masted, square-stern barque that was lost four centuries ago while bringing back gold and silver for Field Marshal Johan Baner, one of Sweden's military heroes in the Thirty Years War. According to the BSAC "Diver," experts are examining the wreck, which measures about 17½ yards long and 5½ yards across.

TOXIC RIGS?

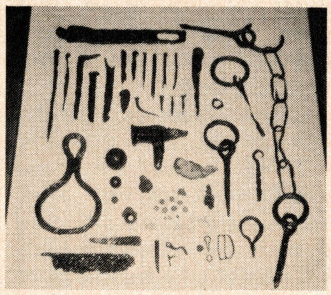
Those offshore oil rigs in the Gulf may be responsible for high concentrations of toxic metals in water adjacent to the rigs. Water samples taken from the Gulf of Mexico in control areas and near the oil rigs were tested for mercury, lead, cadmium, zinc and arsenic by chemical scientists from the Gulf South Research Institute. According to Ocean Science News, zinc and lead concentrations were "highest near the rigs and decreased with distance." Offshore platforms are popular fishing locations and a GSRI spokesman suggested additional studies of toxic metals in seafood.

DIVERS HIJACKED

Last Thanksgiving, a group of skin divers en route to the Cayman Islands were forced to land in Cuba and were released only after $11,000 was paid for alleged repairs to the aircraft. The plane, which carried 14 passengers and two crew members, was intercepted by Cuban MIG jets and ordered to land in Havana. Pilot Al Hichew said he followed all procedures for flying near Cuba (Caymans are only 200 miles south of Havana), but said he was diverted off his original course by the Havana airport control center. Passengers and crew were held at Havana seven hours while the plane was searched. Then, the Cubans said repairs to the aircraft totaled $11,000. The husband of one of the passengers, along with four other persons, posted $11,000 to free the plane. Hichew said there was no instrument problem as claimed by the Cubans.

1711 ARTIFACTS

Last August three divers from Quebec formed an expedition to salvage artifacts from the site where ten British ships sank in 1711. The ships, under the command of Sir Hoveden Walker, were used in an unsuccessful campaign to capture Quebec and eventually Canada. They sank in a storm on the reefs of Eggs Islands (located on the north coast of Quebec in the Gulf of St. Lawrence). The three divers, A. Lepine, H. Fortin, and D. Theberge, made shallow dives to recover artifacts from the reefs, which included cannon balls, musket balls, brass buckles and buttons, a hammer, chest lock, knife blades and iron rings for cables and chains.



SCUBACROSS I

And then there's the one about the Great Underwater Tricycle Races. This was staged by the Army's Ft. Hood (Texas) Scuba Diving club last summer and was called Scubacross I. Problems encountered by the Army tricyclers included buoyancy of trikes and lack of traction. Contestants had to trike to the deep end of a pool and back; on the upward slope of the pool they found it necessary to peddle with their hands and help by kicking with their feet.

COCOS-KEELINGS PROJECT

The Cocos-Keeling Islands have a unique place in history. For one thing these islands, located in the Indian Ocean, provided the basis of Darwin's theory on the formation of atolls. In February, Stan Waterman (Waterman Film Productions, N.J.) accompanied the Philadelphia Academy of Natural Sciences to the islands to document their marine collecting expedition there. The islands are so remote that many new species of fish are expected to be found. After the Academy work is finished, Waterman planned to stay on six weeks, through most of this month at least, to record, film and observe the island's marine ecology as well as the life style of the islanders.

INSURANCE BREAK

Finally, a major insurance carrier has relaxed discriminatory underwriting attitudes toward sport divers. Last fall, Continental Casualty Co., carriers of Underwater Society of America members, proposed dramatic changes in the USA group accident insurance program. The new Accidental Death While Diving benefit has been increased to $2,000. The company also provides $2,000 Accidental Dismemberment coverage while diving. Coverage is automatically provided for all members on the effective date of Society membership, and insurance cost is included in the dues structure. The USA has joined the campaign issue with insurance companies in an attempt to have rates and extra premiums for divers reduced and/or eliminated.

U/W COCKTAILS

(We've heard everything, but this is the cake-taker.)

Some clubs really go all out for unusual underwater activity. The craziest event yet was an underwater cocktail party which was held by the Jamaica Sub Aqua club at Cow Bay, Jamaica, last summer. Club members set up shop in 40 ft. of water. Party games included dominoes and chess (which were played on an iron-legged table), underwater darts, and dancing. Colored balloons were filled with rum punch and handed out to partiers by the "barmaid." Drinkers would poke a hole in the end of the balloon, take their regulators out of their mouths, and "squeeze." In this manner the underwater party continued for 65 min-



utes and was then resumed on shore. It was while the land-party version was taking place that the really wild things began to happen. Not long after they were out of the water, the revelers looked up to see a two-seater plane approaching. The next thing they knew, the plane ditched into the sea about 10 feet from shore, fortunately after everyone was out of the water. In less than 30 seconds, club members were in the water, towing the plane to shore.

The clincher was that late headline news on Jamaican television related the following bit of information: "The Jamaican Aviation Society continues an inquest in connection with an incidence where a Jamaican pilot ditched his plane *in a place where aquatic exercises were conducted.*" Folks, this is no joke. It comes straight from Rosi Boros, Secy. of JCAS.

RAIDERS ZAPPED

It definitely does not pay to raid lobster traps, especially if the lobsters belong to the Fish and Game Dept. Three So. Calif. divers were sentenced to 35 days in jail after being convicted of tampering with lobster traps. The divers were observed off Santa Cruz Island where several traps were placed. Fish and Game wardens inspected the divers' catch and found marked lobsters which the officials had placed in the traps themselves.

RED TIDE TESTS

The Japan Fisheries Resources Assn. thinks a certain plankton is responsible for the red tide (Akashio) which has caused massive fish kills in Japan. The group will try to raise or breed the plankton artificially and then test ways of disposing the plankton — perhaps by drying or exposure to heat.



Dr. Hass: "Listening to music underwater is a fantastic experience; it comes from all sides and you can feel it all over your body . . . The sea's full of Beethoven."

WORLD'S FIRST UNDERWATER HOTEL TO FEATURE UNDERWATER CONCERTS

The world's first underwater hotel will be built off the coast of southern Spain, and if all goes well it should be open this spring. The hotel will be located about 40-60 ft. under the sea off the Costa del Sol near Almeria and will be built of reinforced concrete. Twelve divers can stay overnight in the hotel, which will have bedrooms, dressing rooms, a hall and equipment stores. According to Dr. Hans Hass, undersea explorer from Liechtenstein, divers will put their clothes in a watertight suitcase and swim to the hotel. "That will be the only way to get there," says Hass.

And that isn't all there is to it: the big attraction will be nocturnal subsea concerts in the coral gardens surrounding the hotel. The music will be broadcast into the sea. Says Hass, "Listening to music underwater is a fantastic experience; it comes from all sides, and you can feel it all over your body. If you hear Beethoven for instance, you're right in the middle of the orchestra. The sea's full of Beethoven."

According to promoters making the announcement in Madrid, the mother-hotel is already finished.

HYPERBARIC FACTS

The Hyperbaric Treatment Facility at the U. of Texas Marine Biomedical Institute that we told you about (NB Dec. '73) can treat nearly every type of diving accident. The facility is now available 24 hours a day and can be reached by calling (713) 765-2101; after normal hours, call the emergency room (713) 765-1521.

ODDS & ENDS . . .

Real Eight Co., Inc., Melbourne, Fla., is proceeding under Chapter XI of the Bankruptcy Act. A plan of arrangement was to be furnished to the court on December 20 . . . Owners of sunken vessels, barges and yachts in Florida rivers and streams must remove their derelict vessels immediately or face one year in jail and a fine up to $2500. The Army Corps of Engineers issued the warning based on a June, 1973, decision in Miami Federal Court . . . Texas A & M researchers have been awarded $16,930 from GAF Corp. to study the effects of chlorinated hydrocarbon wastes on sea life and environment . . . Italian divers recently worked to destroy huge mussel beds off Naples following the world-publicized outbreak of cholera in Italy last fall. The disease, which claimed dozens of lives, was linked to shellfish, especially raw mussels, and pointed to a growing pollution of the Mediterranean . . . Lobsters are beginning to show their antennae around the Louisiana oil rigs. The La. Council of U/W Diving Clubs says they had three reports of lobsters being at the rigs in November . . . A marine/oceanography museum has been planned for New York's Beach Channel High School, Rockaway Park. The facility will be ready this spring and is supported by the NY Aquarium, Am. Museum of Nat. History and the Navy.

READERS ARE INVITED TO SEND ITEMS TO NEWS BRIEFS EDITOR HILLARY HAUSER, 8490 SUNSET BOULEVARD, LOS ANGELES, CALIFORNIA 90069

THE TWISTED FATE OF THE U-853

Divers Penetrate Nazi U-Boat Sunk in 140' of water off Rhode Island

By Thomas Roach and Elliot Subervi

May 5, 1945: The *Black Point,* a 5353 ton bulk cargo carrier owned and operated by the C. H. Sprague and Son Company of Boston, was on its last leg of a journey from Norfolk, Va., to Boston, Mass. Leaving her convoy at the approaches to New York Harbor, she proceeded to steam north toward her final destination of Boston. In broad daylight, less than five miles off Point Judith and within sight of Block Island, a torpedo from a lurking submarine tore deep into the bowels of the coal laden vessel, ripping away 40 feet of her stern section. The small collier, mortally wounded, settled quickly by the stern, and 25 minutes later, at 5:40 p.m., she rolled over and sank, taking to the bottom with her the bodies of 13 of her seamen.

The surviving 30 merchant sailors and four members of the Navy gun crew escaped to life rafts to be picked up within the hour by the Yugoslavian freighter, *Kamen*, that happened to be passing by at the time of the incident. The *Kamen* immediately began to broadcast an SOS which was picked up by Anti-Submarine Forces in the area. Among the units which responded to the urgent alarm was Task Force 60.7 which had just delivered a Gibraltar convoy to New York, and was approaching the west end of the Cape Cod Canal, enroute to Boston. Commander Eastern Sea Frontier dispatched four of these craft to the scene of the *Black Point* torpedoing to search for and destroy the marauding U-boat.

First to arrive was the *Moberly*, a Coast Guard frigate commanded by Lieutenant Commander L. B. Tollaksen, USCG. He assumed tactical command, pending the arrival of the Task Group Commander F. C. B. McCune, USN, who had his pennant on the destroyer *Ericson*. Also steaming toward the scene were the destroyer escorts *Amick* and *Atherton*. Meanwhile, during the hour since the torpedoing, the German submarine had been silently creeping seaward on its electric motors, desperately trying to increase the depth of water beneath its keel before the inevitable bombardment by the patrolling Anti-Submarine Forces began.

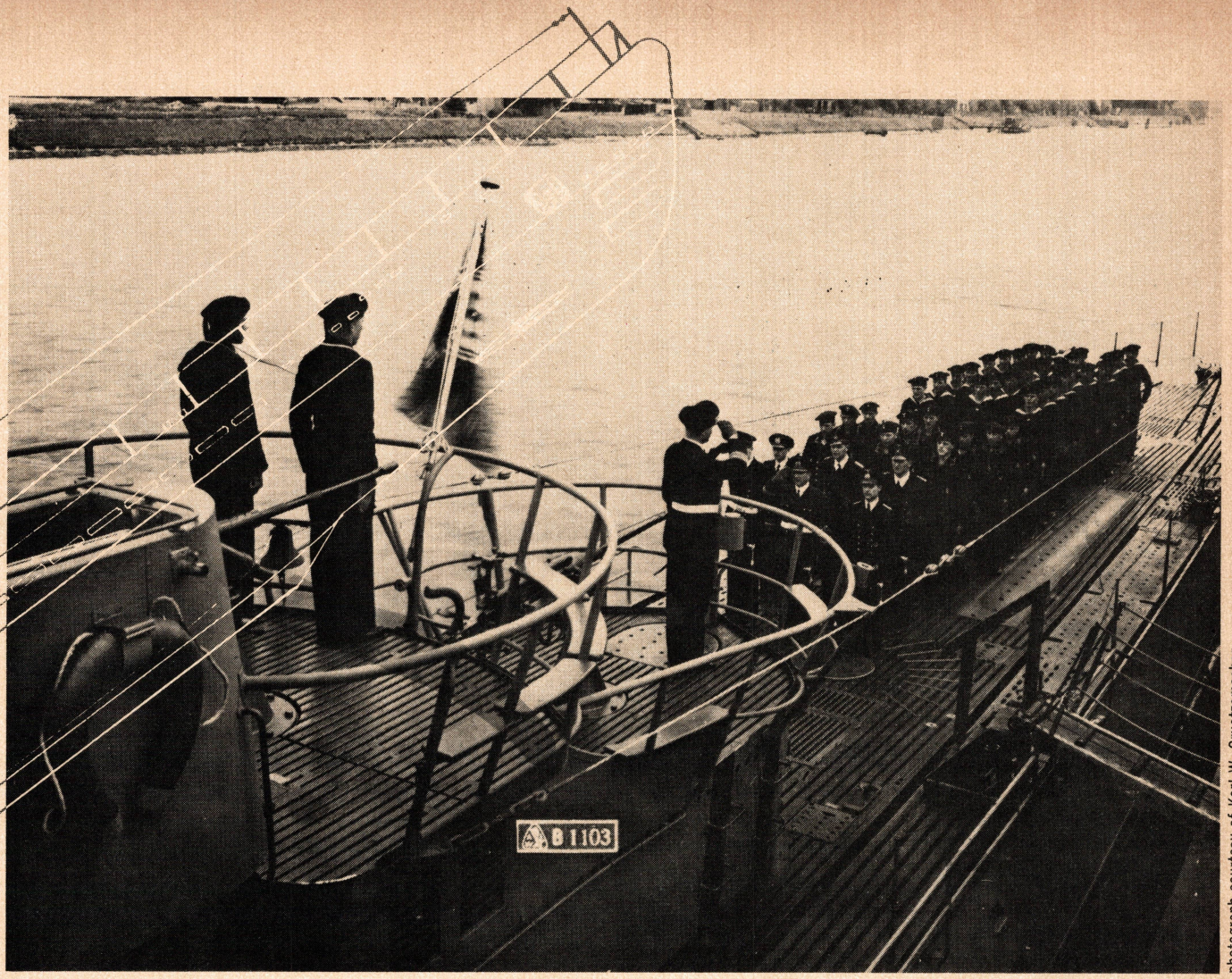
The U-853, a type IX-C, 740-ton snorkel equipped boat built in 1942, was no stranger to the American and British escort groups. It was in June of 1944, while attached to the tenth submarine flotilla under the command of Kapitaenleutnant Sommer, that the U-853 eluded the entire "Croatan" hunter-killer group while engaging in a meteorological operation in the mid-Atlantic. For a whole month, despite a continuous search by two escort carrier groups, the U-boat operated there and was so difficult to locate that the American carrier crews nicknamed it "Moby Dick."

Now, almost a year later, this ghost of a submarine had returned to American shores under the new command of its former executive officer, Oberleutnant Helmut Froemsdorf. The U-853, now a part of the thirty-third submarine flotilla, had left Stavanger, Norway, on February 24, 1945, bound for the east coast of the United States, arriving in its operating area off southern New England late in April. Elusive as ever, the 853's presence was not detected until its torpedo sent the *Black Point* to the bottom.

The air inside the submarine was oppressive, reeking from the combination of diesel fuel, urine, decaying food and the stench of unwashed bodies. Condensation dripped from the hull in small streams, turning everything cold and slimy to the touch. Movement and noise was kept to a minimum as the craft was rigged for silent running. Anyone not needed for the operation of the boat lay in his bunk to conserve oxygen.

In the dim light of the control room, the gaunt, hollowed men looked like gnomes from another world. Bearded faces, bathed in terror, looked upward as the horrible sound of thrashing, churning propellers grew to a crescendo. The asdic pings from the escorts drilled through the hull like steel bits, heightening the terror for the heavily breathing crew. They waited. Suddenly there was a shattering roar and bulbs and gauge faces disintegrated. Somewhere a valve blew and a fountain of water spurted across the aisle. The men cringed in terror as dishes, bottles and cans clattered over the steel deck and rolled into the bilges. Barrage after barrage bracketed the submarine, the concussions crashing the boat into the sandy bottom and blowing it off again in an unholy sequence. For over three hours the ash cans rained down, squeezing the pressure hull like a vise in the shallow water. Inside, heartbeats stopped at each pass of the escorts. Horror and death were only an instant away. At 11:37 p.m., a short six hours after the U-853 had torpedoed the *Black Point*, it was all over for the Germans.

Almost four hours after the attack began, hedgehogs from the destroyer escort *Atherton* landed on the deck of the U-853, turning it into a tormented steel grave for its captain and crew. On the surface, the hunters kept up the hunt until noon on May 6, when Captain Froemsdorf's cap was recovered from the flotsam and debris, together with his chart table. That afternoon a Navy diver descended to the ocean floor to confirm the destruction of the German undersea craft. At that very moment, in Rheims, France, negotiations were in progress between General Eisenhower and German senior officers concerning the surrender. Nine hours and forty-one minutes after Task Force 60.7 had dropped the last of 200 depth charges on the limp body of the U-853, General Alfred Jodl and Admiral Friedeberg signed an



photograph courtesy of Karl W. Gruetzemacher

On June 25, 1943, this rare photograph was taken during the Commissioning of the U-853. The sub was very active during its 98 week career, but 9 hours and 41 minutes before Germany surrendered to the Allies, U-853 was destroyed.

unconditional surrender with Allied Forces making the U-853 the last German U-boat sunk in World War II.

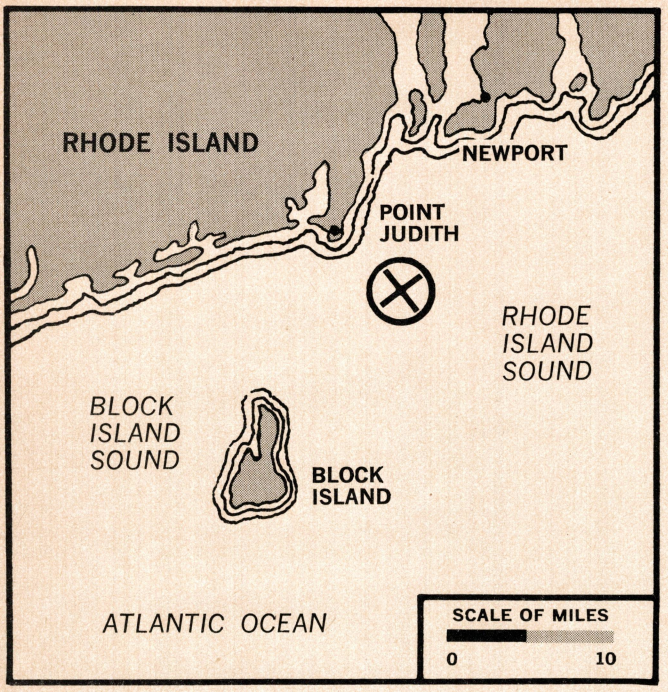
Today, the shattered remains of the U-853 rest in 130 feet of water approximately seven miles due east of Block Island. Over the years since its demise it has been rumored that the sub had been carrying a fortune in diamonds hidden in shell cases as well as a ballast consisting of tons of mercury. To date, these rumors remain unproven and are unlikely since the submarine was on a routine offensive mission when it was sunk.

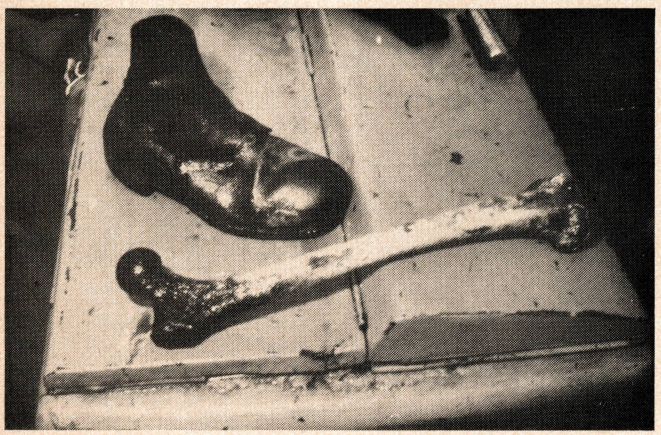
To those of us who dive the great wrecks of the East Coast, the U-853 is much more than just another ordinary dive. For two short 30 minute dives, we are privileged to view a craft that carved an infamous place in the history of naval warfare.

We will never again bear witness to the horrible toll of destruction that the German submarine arm inflicted on the merchant ships of the world. Between September 3, 1939, and May 5, 1945, German U-boats sank 2603 Allied and neutral merchant ships amounting to 1357 million tons and were responsible for the loss of 175 Allied warships. For these successes the German submarine arm paid an outrageously high price. Over 39,000 officers and men served in German submarines and of these, some 32,000 were killed in action; a high proportion of loss that was unequaled in any other branch of the armed forces of any of the belligerents involved in the Second World War. Political passions of war notwithstanding, we must admire the sailors who fought for Germany in these horrendous steel tubes; who fought and died for the misguided ideals of their leaders and ended up carpeting the ocean floor with their bodies. For a short time we can go back a generation into the past, to be part of the last naval engagement of its kind in American waters.

The night before our scheduled dive on the U-853 divers from four states started to arrive in the old whaling village of Montauk. Eyes turned skyward and fingers were crossed as the lingering storm front passed over the point and out to sea. Distances traveled had been considerable and disappointments would run high if the dive were to be scrapped due to bad weather.

Lady Luck was with us as we awoke early the next morning to a still gray, overcast sky but no appreciable wind. By seven o'clock the divers were loading the seemingly endless sets of doubles on Captain Brad Glas' tri, 6-71 powered, steel dive boat, the *Helen II*. Captain Glas is the skipper of a pair of the finest dive boats on this part of the East Coast and is amply qualified to take divers to hard-to-find wrecks around Block Island.





photograph by Don Dwyer



photograph by Paul Tzimoulis

The diesel fumes drifted over the stern of the *Helen II* in billowing clouds as the boat knifed through the water at 16 knots, past the lighthouse on the tip of the island. Two hours later, we reached the designated area and put down a loran buoy. After only 30 minutes, the anchor went over the side to plunge through the depths to the deck of the submarine 22 fathoms below. As the boat rocked slowly back and forth in the moderate seas, the divers methodically dressed in their heavy wet suits and their double 72's equipped with pony bottles. Last minute checks were given to cameras, lights and decompression lines, and the divers started to drop over the side to begin their descent.

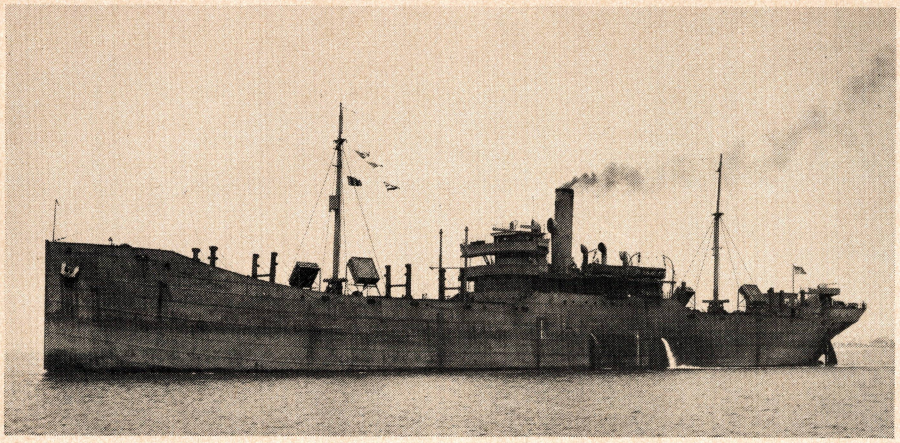
Beneath the rolling surface, we passed through ever darkening layers of cold, green water until we reached the rotted, wooden decking of the U-boat at 110 feet. The light penetrating from above was almost nonexistent and without our powerful lights we would have seen very little. Swimming from the bow, I was surprised at the negligible amount of damage done to that part of the ship. Under the holed decking, two spare torpedoes could be seen resting against the pressure hull, their warheads never to speed death and destruction toward the hulking silhouettes of wallowing, rolling merchant ships. Swimming aft toward the conning tower, I came across the jagged wreckage of one of two fatal wounds inflicted on the U-853.

Fifteen feet of the deck and starboard side had been turned into a horrendous maze of twisted plates and bent piping, revealing the destructive power of the depth charges that exploded at point-blank range. Continuing aft, the silhouette of the conning tower began to take shape in the darkness ahead. The corrosive effects of 27 years beneath the sea had taken their toll of the metal work on the conning tower. Now, all that remained of the original configuration was the heavy steel cylinder of the pressure hull.

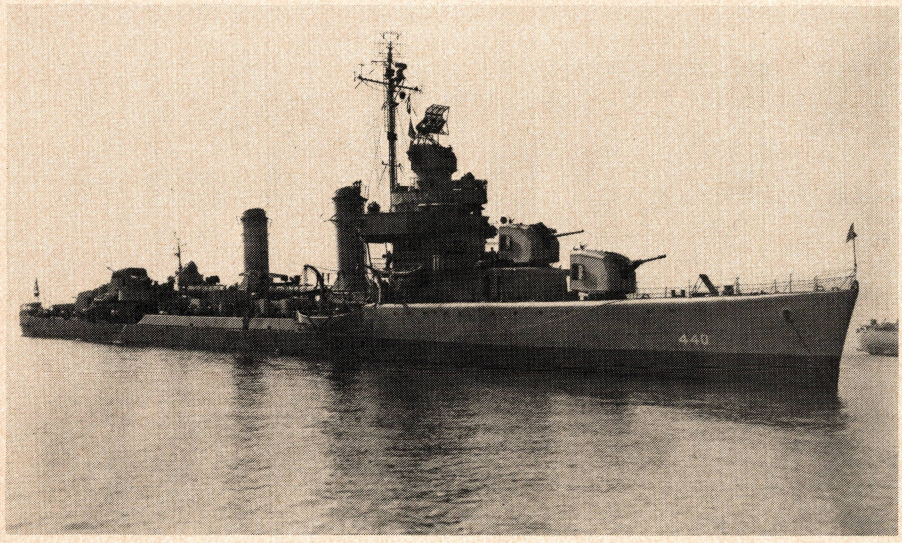
We left the hatch area of the U-boat and descended to the deck beneath the conning tower. Off in the sand below us rested the jumbled, twisted remains of the machine-gun platforms and safety railings, possibly blown off during the attack. Moving on, we passed the skeletal remains of the 3.7 cm anti-aircraft gun, still attached to the hull by spidery looking legs. We continued to swim slowly over the sand toward the stern hydroplanes which now rested on the ocean floor. We saw the propellerless bronze shafts running through shaft support braces and disappear into the darkness under the hull. Still under the overhang of the stern, we swam around the rudders and began moving down the port side of the undersea craft. Midway between the stern planes and the conning tower, we came to the second of two mortal wounds that sank the U-853.

A gaping, splintered hole extended halfway from the keel, up and over the deck plating, stopping only when it reached the starboard hull. At first glance, entrance to the sub through this maze of bent steel plates seemed impossible. A closer investigation from a different angle soon uncovered a hole large enough for a diver to work his way through into the interior of the craft. Carefully, I inched my way through the hole, bypassing piles of wreckage and jagged plates until I was inside the actual pressure hull of the stern torpedo room.

The interior of this room was virtually unrecognizable; electrical conduits and copper tubing hung haphazardly from the inside skin of the hull. Broken banks of de-



Official U.S. Coast Guard photograph



photograph from U.S. Bureau of Ships

photograph by Tom Roach



On May 5, 1945, the German U-boat 853 torpedoed the cargo carrier Black Point *(above left). Four ships from USN Task Force 60.7, including the destroyer* Ericson *(left) were dispatched to search for and destroy the marauding submarine. Within hours the U-853 had been destroyed and lay on the bottom at 130 feet, seven miles due east of Block Island. Over the years, sport divers have found many artifacts from the U-853 including a sailor's leg bone and boot, and a German navigational aid book. The control wheels inside the sub's electrical room are shown above.*

teriorating gauges, still attached to unseen machinery, lay everywhere. Steel valve wheels of all different sizes lined the walls, some so badly oxidized that they fell off in my hand when touched. As I moved forward toward the control room, the round hatch of the first pressure-tight bulkhead began to take shape in the gloom ahead. Slowly and cautiously I inched my way through the narrow ring of the hatch. With my belly rubbing the bottom of the opening I could hear the metallic scraping of my tanks echoing throughout the steel drum of the pressure hull. As my fins cleared the hatch opening, I stood up in what had originally been the electric room of the submarine.

As my light played around the walls of the compartment, I entered into an unreal, monochromatic world. Years of immersion in the sea had turned practically everything dull brown. A heavy coat of oxidation covered every surface in the room, turning the visibility, which had been good, to absolute zero as I swam forward over the debris. I moved slowly, not kicking my feet, but using my arms to pull myself toward an open doorway some 20 feet away. I tried to absorb everything in the short time before the drifting silt caught up with me and made me virtually blind. Buried beneath the electrical equipment and banks of relays were the personal effects of the crew. Deteriorated escape lungs, rotting jackets and boots were testament to their lives.

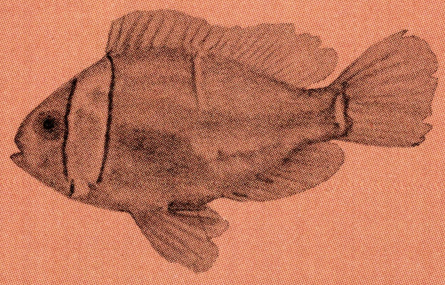
As I looked through the wreckage, I was suddenly taken back by the horror of a moment long since passed into eternity. Before me, sticking out like so many broken sticks from under huge armatures, were the bones of the German sailors. They had been crushed under the weight of the heavy electrical equipment when the explosive force of the depth charges blew them off their mountings, moments before tons of water tore through the submarine to seal the fate of captain and crew. With mixed feelings, I continued moving slowly through the rotting, steel tomb toward the open engine room doorway. As I neared the bulkhead, a quick check of my gauges told me that I had to begin my return to the air-breathing world above.

Anxiously, I retraced my path through the hull in almost zero visibility, again squeezing through the pressure hatch. Guided by the slightly increasing brightness of the water, I picked my way through the wreckage and exited into the open water. Ever so slowly I started up, reluctant to leave behind the wreck that had enveloped me with its lore. For a short time I had been privileged to swim over the deck and through the interior of a World War II German Sea Wolf and to visit firsthand an exciting period in history that came to a violent conclusion almost three decades ago.

The Red Clownfish

(Amphiprion frenatus)

In the sea there are many cases of interdependency, with one living organism depending upon another for survival and both parties deriving benefits from the relationship. One of the best examples of such interdependency, or commensalism, is the relationship between the Indo-Pacific clownfish and the anemone. Clownfishes, (or anemonefishes) of the *Amphiprion* genus are members of the damselfish (Pomacentridae) family that have developed the ability to live among the stinging tentacles of the sea anemone. The anemone provides the clownfish with an extremely effective shelter, since the fish can dart into the tentacles at any sign of danger. Also, the clownfish receives a certain amount of food from the anemone and has been observed eating the wastes of certain anemones as well as food the anemone has regurgitated. Ichthyologists have even seen them biting the tentacles of the anemone for microscopic organisms, slime, or for bits of the tentacles themselves. In return for food and shelter, the clownfishes offer food to the anemone. These fishes have been observed dropping bits of food into the tentacles of anemones, and it is thought that they lure other fishes into the deadly lair of tentacles, where the unsuspecting fish is instantly killed and eaten, the clownfish getting a share of the spoils. □ In the Indo-Pacific, the anemone most closely associated with the clownfishes is the *stoichactis* anemone. The stinging cells (nematocysts) of this anemone can instantly paralyze other fish much larger than the clownfish. How clownfishes remain unaffected by the stinging cells is still only speculative, but it is known that the immunity has something to do with the mucous coating or slime of the fish. If the slime is somehow removed, the fish gets stung like other fishes. According to C. Lavett Smith, a clownfish can lose this protective slime if separated from the anemone for several months. When reunited with the anemone the fish must reacclimate itself by touching parts of its body to the anemone before it can swim freely among the tentacles. Whether the anemone recognizes an identifying slime and voluntarily does not sting, or whether the slime actually inhibits the nematocysts, is not resolved at this point. □ The Red clownfish *(A. frenatus)* is one of about a dozen species of Indo-Pacific damselfishes that has developed the commensal relationship with sea anemones. Why these fishes are called clownfishes may be due to the fact that their bright colors and markings remind one of a clown. The Red clownfish adult is easily recognizable by its combination of a black saddle-like area and the white head bar. The bright red juvenile does not have the black marking, but often has a second white mid-body bar which disappears as it matures. Adults of *A. frenatus* closely resemble the Saddle anemonefish. *(A. ephippium)* because both have the black markings. However, *ephippium* does not have the white head bar as an adult. The juvenile *ephippium* has a thin white bar which disappears after about two months, and this is where the two species are most often confused. □ The Red clownfish is one of the most common of the anemonefishes and is found throughout the Indo-Pacific — off the Philippine Islands, Okinawa, Japan, and Singapore. Divers will almost always see this fish with a small group of other clownfish, sharing the same anemone with at least one other of its own kind. The fish hangs in suspension over the anemone while feeding on drifting zooplankton (its main diet), never venturing too far from the protection of the anemone. During the spawning season the Red clownfish acts like other damselfishes, defending its chosen territory with unbelievable seriousness. When the eggs are deposited, always near the anemone, the behavior of the male becomes almost frenetic. He will fan and pick over the eggs, taking time out only to chase off intruders — including the diver.



(Juvenile Specimen)

Photo By Carl Roessler–Text By Hillary Hauser

Photo taken in 15 feet of water at Marion Reef in the Coral Sea. Roessler used a Nikon F camera with a 55mm lens, a Bauer strobe, Kodachrome II, 1/60 at f11, 15 in. from the subject.





Stella Maris
Eternal Paradise

By Paul J. Tzimoulis

Few dive resorts have grown as large and yet remained as unspoiled as Stella Maris. Situated on a high ridge at the northern end of Long Island, and overlooking the clear blue Atlantic Ocean, this lovely hotel stands as one of the most charming resorts in the Bahamas. The weather is almost always perfect, for Long Island lies on the ideal latitude. Because of this the area is often described as the "Isle of Perpetual June."

In spite of its natural tranquility, Stella Maris has not been sluggish in development. Since SKIN DIVER first discovered this resort in 1970, Stella Maris has played host to over 5000 visiting divers and presently averages 1500 divers per year. Scuba facilities have tripled in size and the resort now boasts of four high

pressure air compressors, three large dive boats, a two and one-half ton dive truck, a 15 foot deep scuba training pool, and a complete dive shop. The hustle and bustle of diving activities is in high contrast with the slow pace of the surrounding countryside.

Yet for all of this activity and the hard press of thousands of divers, the aquatic environment is none the worse for wear. The coral reefs are just as breathtaking as ever . . . the fish and lobster are just as plentiful . . . and the groupers are more friendly than ever. Instead of becoming depleted and destroyed, Stella Maris grows better by the year. Some 26 major dive areas have been located and they are being dived regularly. The variety of undersea attractions has been greatly expanded to include shipwrecks, blue holes, drop-offs, coral caves, antler coral forests, shallow coral heads, medium depth reefs, and deep coral walls. Greater emphasis has been placed on snorkeling, and more beach dive areas have been opened. Today, Stella Maris offers just about any type of diving that the sport enthusiasts could want.

Why isn't Stella Maris wearing out? How does the undersea environment support great numbers of divers. The answer lies in the basic laws of nature. First of all, the waters surrounding Stella Maris remain unpolluted and relatively undisturbed. There is absolutely no industry on north Long Island, and very little land development. Fewer than 1000 Bahamians live in this area, and they are spread out in a number of tiny villages, so sewage disposal is not a problem. Aside from the Stella Maris Inn and the marina, little has changed on Long Island in the last century.

The reefs and waters of Stella Maris are not overfished. The food requirement of a population of 1000 people is comparatively small, and the handful of local Bahamian fishermen operating there can easily fulfill their needs. Long Island is too far from Nassau or Florida to make commercial fishing feasible, and the Spanish Wells boys can find better catches closer to home. So far as diving is concerned, conservation is stringently practiced, but spearfishing is not entirely excluded. Certain areas, such as Big Reef, have been set aside for the spearfishing buffs. However, any diver wishing to spear fish must comply with Bahamian law which limits all underwater hunting to that which is done by free diving and with the use of a Hawaiian sling or pole spear. Spearfishing with scuba is against the law and mechanically powered spearguns are prohibited.

The reefs are not overworked by the divers. Trip destinations are regularly rotated, giving heavily dived reefs an opportunity to heal themselves. The picking of sea fans, sponges and coral formations is discouraged. The dive sites are spread out over a vast area of ocean, with several miles often separating one spot from another. This dissipation of "human impact" reduces the destructive forces to a tolerable level.

It is this fortunate combination of natural circumstances and ocean management which permits Stella Maris to live in harmony with nature, and remain a paradise eternal for visiting divers.

A good example of the unique diving offered at Stella Maris is a reef area known as Grouper Village. Situated a half mile off Cape Santa Maria Beach on the west side of Long Island, this lovely spot lies in calm, protected water. The depth there averages 40 feet and the bottom is flat and sandy. There are three large coral heads, 60 to 80 feet in diameter, which rise up from the sand to within 12 to 15 feet of the surface. They lie within sight of each other, perhaps 100 feet apart. Underwater visibility in this area is exceptionally good. It averages 80 feet and can attain 150 feet because the deep-water drop-off is just a few hundred yards away.

Grouper Village has been so named because of four resident groupers which have become exceptionally tame. They are all Nassau groupers and range in size from 7 to 15 pounds. Having been fed regularly by the underwater guides these marvelous creatures now take food willingly from any diver's hand. In fact, they've become so enthusiastic about this ritual, that all four groupers swim up to the surface to greet divers at the start of their descent. Following the divers around like puppy dogs the groupers sadly eyeball the guide's food pouch, hopefully begging for a tasty morsel or two. Occasionally, one of the groupers will nuzzle a diver's vest, hunting for the food bag. They'll eat almost anything from bananas to hot dogs, but show a distinct preference for conch and lobster.

The groupers have been given names: Hansel is the big 15 pounder, Gretel is the slightly smaller 12 pounder, Max is the 9 pounder, and Fritz is the smallest — a 7 pounder. They provide endless hours of fascination and entertainment for all that visit Grouper Village, as these characters are truly the clowns of the reef. They have an uncanny ability to act as though they understand exactly what a diver is doing and seem to exhibit human traits such as friendliness, humor, anger, and frustration.

Fish feeding at Grouper Village is not limited to the groupers. Angelfish, yellowtail, snappers, and many other reef varieties eagerly await the diver's arrival. There's even a large four and one-half foot long barracuda that comes in temptingly close when the feeding action really gets going. So far, this wily cuda is too

photography by Author



The antler coral is like an underwater forest at House Reef on the eastern shore off Stella Maris. This spot is a beach dive and popular with both snorkelers and scuba divers. Above, Jorg Friese coaxes a small Nassau grouper named Fritz to come out from under its ledge for a morsel of conch. Fritz eats almost anything, from bananas to hot dogs.

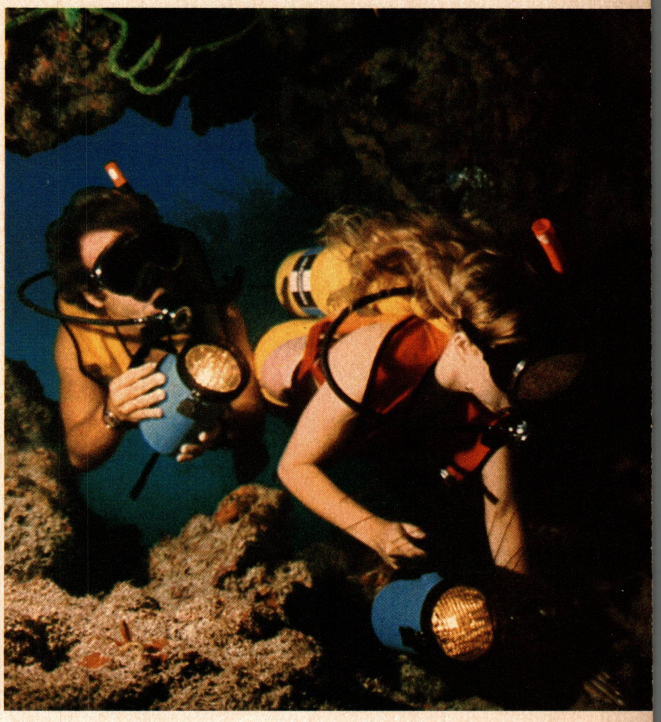


Stella Maris





photographs by Paul Tzimoulis



Underwater photographer Bobby Burns films his wife Abbie hand feeding a 15 pound Nassau grouper named "Hansel" at a coral reef known as Grouper Village. An entire family of groupers living on this reef has been tamed by the Stella Maris guides and provides hours of delightful entertainment for visiting guests. Scuba guide Jorg Friese and California diver Donna Cooksey explore a shallow water coral cave at Barracuda Heads. These caves are filled with a dazzling array of colorful sponges, hydroids, and marine life. The most magnificent sponges, such as this chrome-yellow Pipe Organ, are to be found on the Long Island Wall . . . Stella Maris' spectacular drop-off.

Stella Maris



shy to take food from a diver, but chances are that he could be tamed. Because of the constant supply of food gifts, this small reef area has now become filled with fish of all kinds. Great schools of jack crevalle and horse-eye jacks circle the coral heads, while big blue parrotfish and gray snappers swarm over the coral. The great abundance of fish on these three coral heads gives every appearance of being a fish village.

But the king of Grouper Village is rarely seen out in the open. He is a 250 pound jewfish named Brutus. He is a very shy but clever fish which almost always retreats into the dark recesses of his coral cave at the first signs of approaching divers. Only once have I caught him out in the open and I found that attempting to photograph him was more difficult than getting a picture of Howard Hughes. Brutus definitely dislikes publicity and prefers the life of a cave recluse.

A quarter of a mile north of Grouper Village lies another new dive spot known as the Schooner Wreck, an ideal location for the underwater photographer. A 36 ft. wooden hull, two masted schooner, it lies upright on the ocean floor in 65 feet of water. Tilting 30 degrees to port, this sunken sailing ship remains completely intact with masts and rigging in place. The ship was purposely sunk in the fall of '73 in order to create an artificial reef as well as a new dive spot. Since then a tremendous amount of marine life has taken up residence on the wreck and schools of fish swarm over her decks. It's the kind of a shipwreck that underwater photographers dream of finding . . . small enough to completely fit into the visibility limits of the picture, yet large enough to attract large fish. Even Brutus, the giant jewfish, has been seen visiting this latest addition to the sea floor.

Perhaps the most spectacular addition to the Stella Maris diving repertoire is a new drop-off known as the Long Island Wall. Located a mile from Cape Santa Maria Beach on the northwest end of Long Island, this vertical drop-off runs for a distance of five miles. It is a deep wall, starting at 100 feet and dropping vertically to depths between 1200 and 2000 feet. There is little current and visibility is 200 feet or better. Because of the extreme depths the Long Island Wall is limited to expert divers and veteran instructors with previous deep experience.

The Wall is a vertical cliff of living corals, sponges and hydroids. Huge purple or yellow tube sponges lean out from the vertical face feeding on the microscopic marine organisms drifting by. Forests of red gorgonian fans and huge black coral trees cover many portions of the face like some dense undersea jungle. Other sponges of endless shapes and hues of red, pink, lavender, brown, green and orange provide underwater photographers with an unlimited source of exciting subject matter.

Long Island Wall is also where one finds the really big fish . . . and sometimes sharks. Groupers weighing 40 to 50 pounds are common and pelagic creatures such as giant amberjack and tuna fly by with incredible grace. The Wall is a busy place with teeming fish, and the diver must stay alert every second in order to catch it all. Sharks are sighted with regularity — at least one every other dive — but they tend to ignore the diver's presence. Lemon sharks, makos and tiger sharks seem to be the most frequent visitors but many sightings still remain unidentified. At times it can be a high voltage scene for the experienced diver who seeks adventure.

Although the diving is superb, there are many other factors which have contributed to the increasing popularity of Stella Maris. At this resort the emphasis is on comfortable (but not extravagant) accommodations, a cordial atmosphere and a daily schedule of activities. You're never bored at Stella Maris.

The hotel complex of ten buildings is spread out over 100 acres of hillside overlooking the sea. It's a breathtaking view, and practically every room offers an unobstructed vantage point. The main building sits on the crest of the hill and serves as the social gathering point for the entire complex. This building houses the main dining room, cocktail lounge, gift shop, front desk, and administration offices. Off to one side of the building there is also a swimming pool, game room and barbecue patio.

In the evenings, there's plenty of activity around this area as the hotel management sponsors some sort of event every night. For example, Saturday evening is "smorgasborg nite" with a marvelous buffet in the dining room and dancing to a Bahamian band afterward. Sunday evening, hotel guests are bused down to the marina's lounge after dinner in order to watch underwater movies and special slide show presentations. On Monday evenings the hotel staff and the guests enjoy a very unique "cave party." The staff sets up an entire bar, band, and barbecue buffet inside a giant limestone cavern located near the hotel. The cave is lit by several bonfires and guests sit on rocks and dine on stone tables, "Flintstone style." It's a delightful evening of gaiety and dancing to limbo music . . . and an experience seldom found anywhere else.

On Tuesday evening there are crab races held in the cocktail lounge with dancing afterward. Wednesday is "steak barbecue nite" with rum punch cocktails served on the patio while a Bahamian band plays local Calypso tunes. Guests have an opportunity to select their own steak and instruct the chef in how they prefer it done. Thursday is generally a "free evening," which is a welcomed rest for those who've been going strong both night and day. Friday there is a nightclub tour of all the quaint little Bahamian bars and cocktail lounges in the area. This is a wonderful opportunity for guests to meet and mingle with Long Island's residents and listen to their charming philosophy about life and the state of the

world. Although the average Bahamian is well insulated from the hassels of world crisis, they are fully aware of what's going on and their comments are a delightful mixture of country humor and Bahamian logic.

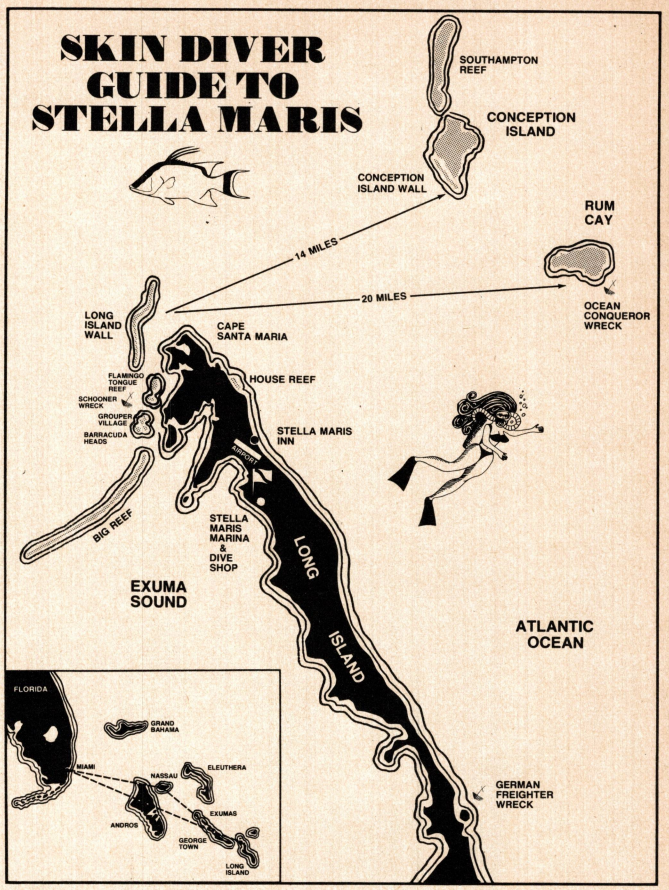
In addition to the daily dive boat trips, Stella Maris offers quite a list of other activities. Guests can go sailing in a catamaran or a Bahamian sloop, or take out a Scorpion class sailboat themselves. There is water-skiing at Deal Beach, beach-combing and shelling at Cape Santa Maria Beach, or tennis at nearby courts. One can go bone fishing in the shallow sand flats or deep-sea fishing off the north tip of Long Island. Three swimming pools on the hotel grounds make it convenient to catch a quick swim and a little sun tanning at any time. At least twice a week there is a snorkeling tour and beach picnic at one of the lovely, untouched beaches such as Columbus Point or Cape Santa Maria Beach. These beach outings are especially enjoyed by the non-scuba wives, the children, or the entire family. Sun, sand and sea are a way of life at Stella Maris, and people who enjoy the outdoor life style fall in love with this delightful resort.

Although Stella Maris is situated well off the beaten track, it is not difficult to reach. There is daily projet service from Nassau to Stella Maris via the new Bahamian airline service. There are also daily flights from Miami direct to Georgetown, Exumas, on Mackey International Airlines. Stella Maris Inn will then pick you up in Georgetown in its own private plane and fly you the remaining 35 miles to Stella Maris airport. The hotel operates two planes, a Piper Aztec and a twin Beachcraft, for the convenience of their guests. They will pick up or deliver guests to any other airport in the Bahamas or Miami, so as to make other flight connections.

Scuba enthusiasts will find Stella Maris especially interesting because the hotel offers several all-inclusive diving packages at bargain rates. The most popular has been the special "scuba package" which includes all bus transportation on the island, room (double occupancy), three meals per day, scuba tanks, weight belt, back pack, and plenty of air. The only additional cost is a $2.50 service charge and government tax. The "scuba package" rate is $41 per day during the summer season (April 20 to December 19) and $47 per day during the winter season (December 20 to April 19).

This year, the hotel management is offering a new "Econo Package" for more thrifty divers. The package includes exactly the same hotel and diving services and facilities as the "Scuba Package," but without the meals. The divers are put up in new efficiency type room accommodations built down by the marina. The rooms contain a small kitchen facility for cooking, or guests can eat at the new marina restaurant. Prices there are very modest. The "Econo Package" rate is $26 per person year round for double occupancy and $32 per day for single occupancy It's just about the best resort buy available in the Bahamas.

If you would like more information, prices, or brochures about Stella Maris, you can write to: Jorg Friese, Director, Stella Maris Inn, P.O. Box 105, Stella Maris Post Office, Long Island, Bahamas. Reservations can also be made by contacting Bay Travel Inc., 2435 E. Coast Highway, Corona del Mar, Calif., 92625. Phone (714) 675-4321.





House Reef, with its magnificent antler coral formations, is one of the most popular shallow water dive spots at Stella Maris. Barracuda Heads, however, boasts a 25 pound grouper named Herbie which will eat out of a diver's hand.

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As diving has become more sophisticated, UNEXSO (International Underwater Explorers Society) has recognized the need for quality diver



education. During the months of 1974 both of UNEXSO's facilities (Freeport and Romora Bay, Harbour Island, Bahamas) will offer professional programs that will feature: UNEXSO/Schulke Underwater Photo Workshop; UNEXSO / Rose Marine Identification Workshop; Physicians Course in Diving Medicine; Decompression Diving Courses; and Advanced Diving Courses — as well as six day (30 hour) certification courses and three hour beginners courses.

For more information about these programs, contact: UNEXSO, 1148 N.E. 48th Street, Pompano Beach, Florida 33064.

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Mike and Donna are the new dive masters and managers of the facility, which has a new dock where divers can board the 28 foot dive boat *Deep 6*. For more information and reservations, contact: Bob Soto, Box 894, Grand Cayman, British West Indies.

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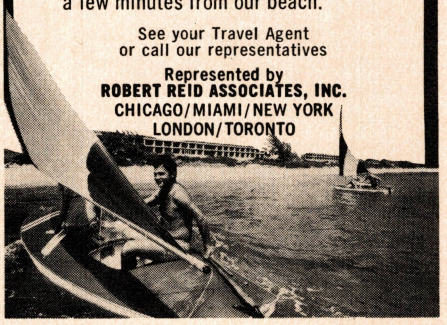
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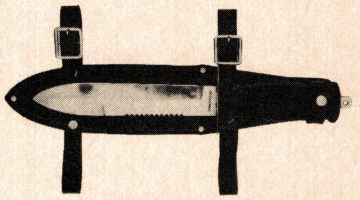
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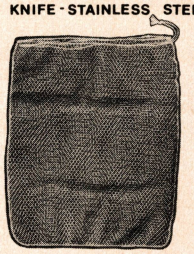
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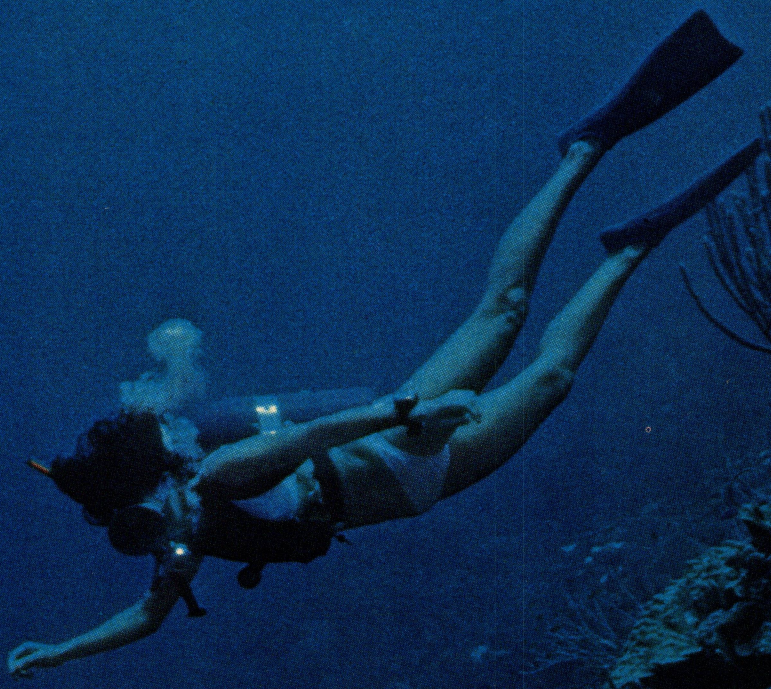
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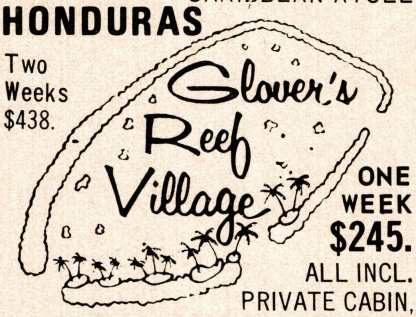
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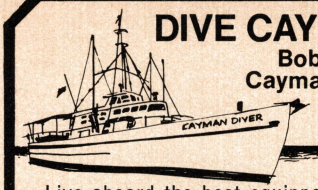
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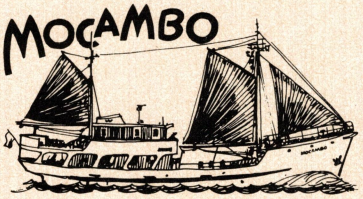
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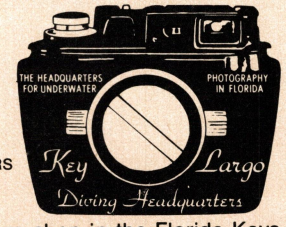
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Owned and operated by Tom and Sharon Jacobus, Innerspace has set up each of its 11 day tours to spend the first three days visiting Ponape. Divers will have their initial glimpse of the lush tropical reefs of the Pacific, and explore the mysterious ruins of Nan Madol, an ancient city lying partially submerged along the edge of a warm lagoon. The remainder of the tour is spent at Truk with eight days of beachcombing and steady diving among the shipwrecks in the lagoon and vertical drop-offs of the outer reef. With the many varied sights scattered in the warm, clear water, at least three different locations are dived each day.

The entire 11 day trip, which includes air fare from Honolulu through Micronesia, is $720. This includes all scheduled trip costs except food, drinks and personal expenses. Tanks are provided on all trips. For more information and reservations, contact: Tom and Sharon Jacobus, Innerspace Adventures, 1907C Fox Blvd., Hickam, Hawaii 96553.

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Sea-Probe's diving vacations are a complete package: includes air fare, hotel accommodation, meals and diving with equipment. Among its destinations are Stella Maris Inn, Small Hope Bay Lodge and Romora Bay Club in the Bahamas, Bob Soto's Lodge on Grand Cayman, Chalet Caribe, Sub-Sea Jamaica and the Sundowner in Jamaica, Paradise Beach Hotel on Barbados, and Camp Carriacou in the Grenadines, West Indies.

Group tours or custom designed vacations are available. For more information contact: Sea-Probe Travel, 825 Eglinton Ave. W., Suite 401A, Toronto, Ontario, Canada M5N 157.

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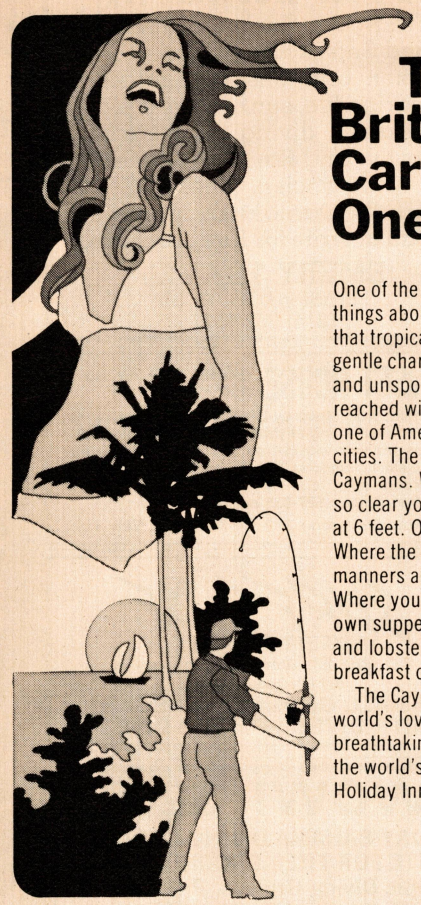
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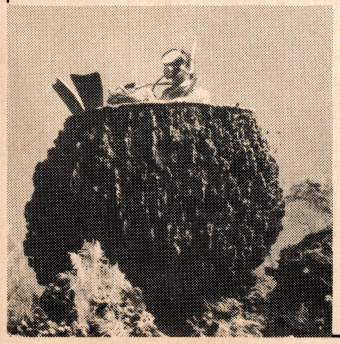
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Dive Tour News

Mar. 1, 8, 15, 22, 29—BONAIRE—8 days, Royal Caribbean Services, New York, N.Y.
Mar. 2—BIMINI—7 days, Capt. Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
Mar. 2 — BERMUDA — 7 days, Skin Diving School, Bronx, N.Y.
Mar. 8—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
Mar. 12—NASSAU—10 days, Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
Mar. 15—COZUMEL/YUCATAN — 7-12 days, See & Sea, Inc., San Francisco, California.
Mar. 15—AFRICA/INDIAN OCEAN — 21 days, Carl Roessler, See & Sea, San Francisco, Ca.
Mar. 15—SPANISH HONDURAS—4 days, Grand Am Int'l Tours, Ocala, Fla.
Mar. 16—CAYMAN ISLANDS — 8 days, See & Sea, Inc., San Francisco, California.
March 17—AMBERGRIS CAY/BELIZE—7 days, U/W Explorers Society, Pompano Beach, Fla.
Mar. 24 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
Mar. 25—PANAMA/SAN BLAS—10 days, Photomarine Int'l Travel, Reseda, Calif.
Mar. 26—NASSAU—7 days, Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
Mar. 29—BAHAMAS—3 days, Grand Am Int'l Tours, Ocala, Fla.
Apr. 2—TRUK/PONAPE—11 days, Innerspace Adventures, Hickam, Hawaii
Apr. 5—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
Apr. 5—NASSAU—7 days, Capt. Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
Apr. 5, 12—BONAIRE—8 days, Royal Caribbean Services, New York, N.Y.
Apr. 7—SPANISH HONDURAS—6 days, Grand Am Int'l Tours, Ocala, Fla.
Apr. 9—CARTAGENA, COLOMBIA—11 days, Sunland Int'l Tours, Beverly Hills, Calif.
Apr. 10—ROATAN/HONDURAS—6 days, Island Reef Safaris, Wilton, Conn.
Apr. 14—CAYMAN BRAC—7 days, U/W Explorers Society, Pompano Beach, Florida.
Apr. 15—HAWAII/KONA—8 days, Photomarine Int'l Travel, Reseda, Calif.
Apr. 19—TAHITI/RANGIROA—9 days, Photomarine Int'l Travel, Reseda, Calif.
Apr. 19 — COZUMEL/YUCATAN — 7-12 days, See & Sea, Inc., San Francisco, California.
Apr. 20 — TRUK/PALAU — 15 days, Atlantis Safaris, Miami Shores, Fla.
Apr. 20—SP. WELLS, BAHAMAS—7 days, Skin Diving School, Bronx, N.Y.
Apr. 20 & 30 — FREEPORT—7 days, Adventure Cruises, Ft. Lauderdale, Fla.
Apr. 21 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
Apr. 21—BONAIRE/CURACAO — 10 days, Dewey Bergman, See & Sea, San Francisco, Ca.
Apr. 26 — BAHAMAS—3 days, Grand Am Int'l Tours, Ocala, Fla.
Apr. 27 — TRUK/PALAU — 15 days, Atlantis Safaris, Miami Shores, Fla.
May 5—ROATAN—7 days, Underwater Explorers Society, Pompano Beach, Florida.
May 11—NASSAU—7 days, Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
May 12—GRAND CAYMAN—9 days, Photomarine Int'l Travel, Reseda, Calif.
May 17—COZUMEL/YUCATAN — 7-12 days, See & Sea, Inc., San Francisco, California.
May 17—SPANISH HONDURAS—4 days, Grand Am Int'l Tours, Ocala, Fla.
May 18 — GREEK ISLANDS — 17 days, Emery Travel Service, Bradford, Pa.
May 18—GRAND CAYMAN—7 days, Skin Diving School, Bronx, N.Y.

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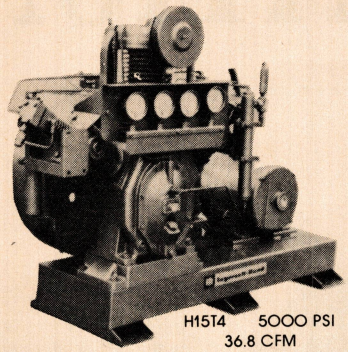
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Dive Tour News

May 19—BONAIRE/CURACAO — 10 days, Rick Tegeler, See & Sea, San Francisco, Calif.
May 19 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
May 20—BIMINI—7 days, Capt. Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
May 23—HONDURAS—7 days, Kathy Taylor, Island Reef Safaris, Wilton, Conn.
May 24—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
May 24 — COZUMEL/CHINCHORRO REEF — 11 days, Sunland Int'l Tours, Beverly Hills, Ca.
May 25—CAYMAN ISLANDS — 8 days, See & Sea, Inc., San Francisco, California.
June 7—BONAIRE/CURACAO—9 days, Loyal Travel, Inc., San Antonio, Texas.
June 8—SPANISH HONDURAS—6 days, Grand Am Int'l Tours, Ocala, Fla.
June 8—BIMINI—7 days, Capt. Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
June 11—HAWAII/KONA—8 days, Photomarine Int'l Travel, Reseda, Calif.
June 11 & 25—TRUK/PONAPE—11 days, Innerspace Adventures, Hickam, Hawaii.
June 13—VIRGIN ISLANDS—12 days, Sierra Club. San Francisco, Calif., Trip #382.
June 14—RIO DE JANEIRO, BRAZIL—14 days, Sunland Int'l Tours, Beverly Hills, Calif.
June 14—COZUMEL/YUCATAN — 7-12 days, See & Sea, San Francisco, California.
June 15 — TRUK/PALAU — 15 days, Atlantis Safaris, Miami Shores, Fla.
June 16—AKUMAL—7 days, Underwater Explorers Society, Pompano Beach, Florida.
June 17 — AKUMAL — 10 days, Photomarine Int'l Travel, Reseda, Calif.
June 17—SEA OF CORTEZ—11 days, Sierra Club, San Francisco, Calif., Trip #337.
June 19—BIMINI—10 days, Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
June 22—CAYMAN ISLANDS — 8 days, Dewey Bergman, See & Sea, San Francisco, Ca.
June 22 — COZUMEL — 7 days, Skin Diving School, Bronx, N.Y.
June 23 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
June 24—PANAMA/SAN BLAS—10 days, Photomarine Int'l Travel, Reseda, Calif.
June 26—GALAPAGOS ISLANDS — 18 days, Dewey Bergman, See & Sea, San Francisco, Ca.
June 28 — COZUMEL/AKUMAL — 8 days, Sunland Int'l Tours, Beverly Hills, Calif.
July 3 & 15—NASSAU—7 days, Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
July 4—MAUI & LANAI, HAWAII—11 days, Sierra Club, San Francisco, Calif., Trip #312.
July 12—SPANISH HONDURAS—4 days, Grand Am Int'l Tours, Ocala, Fla.
July 13—ANDROS, BAHAMAS—7 days, Underwater Safaris, Boston, Mass.
July 14—CAYMAN BRAC—7 days, U/W Explorers Society, Pompano Beach, Florida.
July 16—GALAPAGOS—23 days, Sierra Club, San Francisco, Calif. Trip #340.
July 18—MAUI & LANAI, HAWAII—11 days, Sierra Club, San Francisco, Calif., Trip #313.
July 20 — BRITISH HONDURAS — 8 days, Sunland Int'l Tours, Beverly Hills, Calif.
July 21 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
July 23 — TRUK/PONAPE—11 days, Innerspace Adventures, Hickam, Hawaii.
July 28—TAHITI/RANGIROA—9 days, Photomarine Int'l Travel, Reseda, Calif.
Aug. 2—BIMINI—7 days, Capt. Skeet LaChance, Adventure Cruises, Ft. Lauderdale, Fla.
Aug. 2, 30—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.

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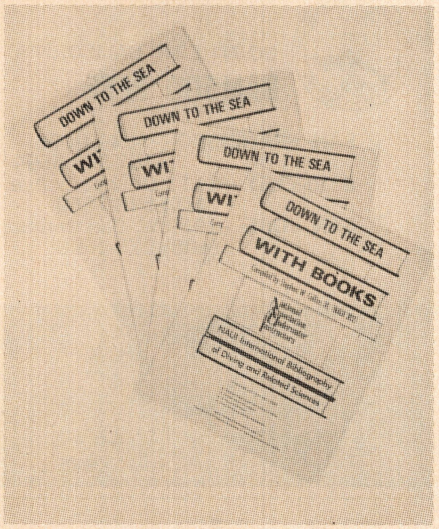
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Down To The Sea With Books, by Stephen W. Collins III, has just been released by the National Association of Underwater Instructors (NAUI). The "NAUI International Bibliography of Diving and Related Sciences" will satisfy many researchers' and divers' needs for underwater information. The bibliography includes nearly 1500 entries on various subjects related to diving and the underwater world, a list of diving related periodicals, entries by author, entries by subject, publishers list.



Stephen Collins began his diving career 16 years ago. After graduating with top honors from the U.S. Naval Underwater Swimmers School in Key West, Florida, Collins served with the Underwater Demolition Teams and the Deep Sea Diving School. Upon discharge he received a Captain's commission in Underwater Rescue from the Maryland State Civil Defense Agency. In 1962 Collins was certified as an instructor for NAUI. He now serves part time as instructor in biology, general chemistry and astronomy for the City University of New York. Collins holds a B.S. in biological oceanography and is completing his masters degree.

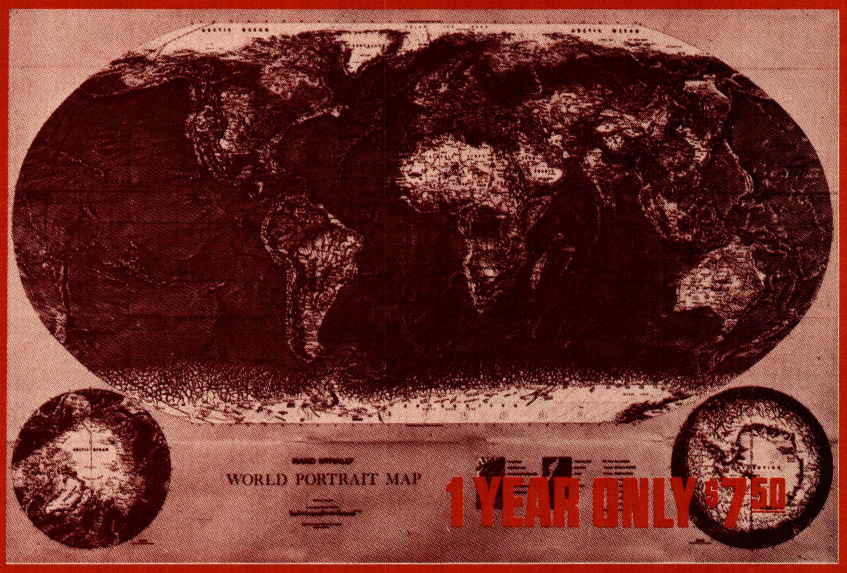
Down To The Sea With Books contains 42 pages packed with where to find just about anything in writing concerning the underwater world. The bibliography serves as an excellent resource for anyone teaching diving, doing scientific research, or just plain curious about the world of water. From aquatic life to sunken treasure to maritime law to shell collecting, this book tells the reader where to find information about the subject. To order a copy, send $3.95 in check or money order payable to NAUI, to NAUI Headquarters, 22809 Barton Road, Grand Terrace (Colton), Calif. 92324.

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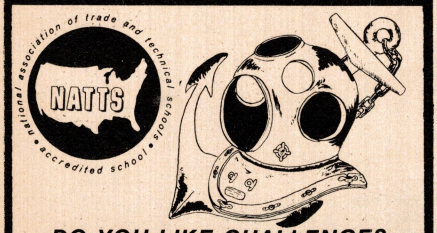
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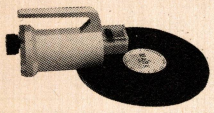
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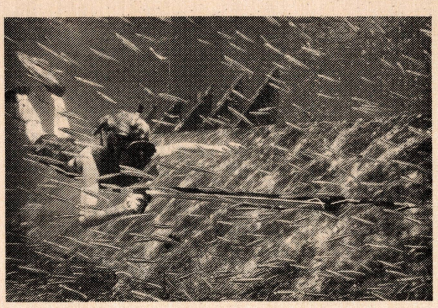
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SPEARFISHING

(Continued from Page 51)



protect it. Any fish that is not edible should be completely out of spearfishing as is the garibaldi in California. Also, the type of guns should be controlled, in the sense that you can go as far as an arbalete but no more than that, which means that all the European bazooka-type of guns should be eliminated.

In the final analysis, the answer to all the controversy is very simple: put the sport of spearfishing back as it was at the start and recognize that we really have two sports — the sport of spearfishing and the sport of scuba diving. They are both marvelous sports, but they are completely different in their techniques and equipment. As a matter of fact, the fins for spearfishing are different than the ones for scuba diving; so is the mask and so is the technique. We must disassociate the two sports and keep them that way.

I don't like any form of legislation. For that matter, the best form of legislation is education. I would like to create a movement to rehabilitate the sport of spearfishing, to organize and educate the diver, create special equipment for spearfishing, special organizations which would give confidence to the spearfishermen that they are in a legitimate type of sport, that it is not only exhilarating but also provides good food (of no little importance these days), and that they belong to a sport that was origin of the entire sport of diving.

Everyone should participate in the rehabilitation of spearfishing: SKIN DIVER and all specialized diving-related magazines, manufacturers, the Underwater Society of America, diving clubs, diving schools (such as NAUI, NASDS, PADI and YMCA), pro shops, and all spearfishermen around the world who love their sport. Then we can have our favorite sport back in its original, dignified position and help it become strong again as it was in the beginning. And not be ashamed to say, "I am a spearfisherman." We all started from that and we should not be ashamed of our origin, especially when our origin is noble as our sport is.

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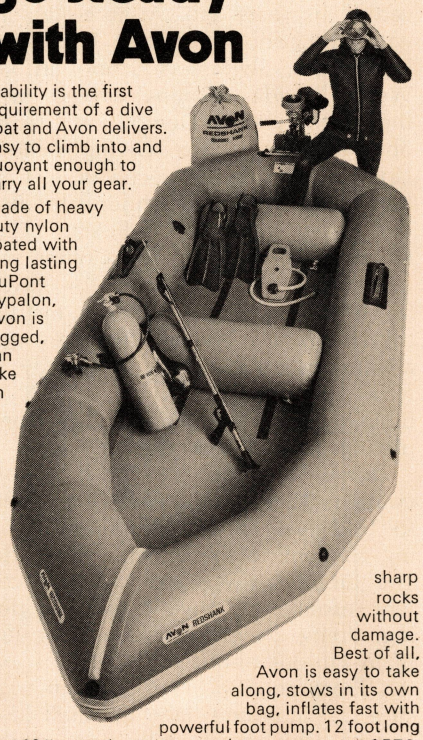
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CORAL GOUGERS

(Continued from Page 57)



corals and that commercial harvesting should be limited to certain designated areas to managed artifical reefs. He is also emphatic in stating that all corals should be included because protection of only certain species, or size-poundage regulations, will do more harm than good. Corals are the keystone species of the reef system, and the whole system must be protected.

You can draw your own conclusions from the evidence presented. To this writer, it appears obvious that commercial coral collecting is a serious threat to one of the ocean's most valuable ecosystems; that amateur collecting may be a serious threat in popular areas already under stress from pollution; and that piecemeal legislation may do more harm than good as nobody knows what is happening.



The next time you are tempted to break off a pretty piece of coral, remember that it will take three years to repair itself — if conditions are just right. If you are tempted to remove a small colony, or a small piece of brain coral, it will take ten years to grow a new one — if ever.



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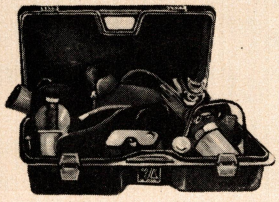
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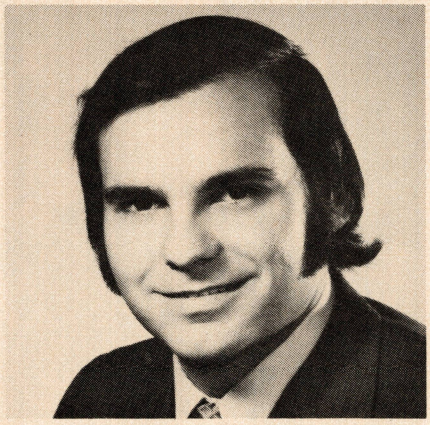
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NEW VOIT MANAGER

Robert Leite has been named western district manager of AMF Swimaster, a division of AMF Voit, Inc. He will be responsible for sales/service in five western states, acting as scuba specialist serving AMF Swimaster dealers. Leite has been with AMF Voit, Inc., since 1970 as a mechanical engineer performing design, testing and evaluation of scuba equipment. Before that, he was a mechanical engineer with U.S. Divers.



Leite's underwater career began at age 14 in wreck diving and competitive sport fishing. He is a certified NAUI and PADI instructor, as well as an accomplished underwater photographer and technical equipment repairman. Leite resides with his family in Garden Grove, California.

NEW DIVERS EXECS.

John Cronin, president of U.S. Divers Co., announced the appointments of four vice presidents and a controller. The new appointees are: Gordon McClymont, vice president, marketing; W. W. Watkins, vice president, operations; Lawrence Runyon, vice president, finance; Leon Cerniway, vice president, engineering; and Frank Davis, controller.



Gordon McClymont has been with U.S. Divers for eight and a half years in the capacity of marketing director. As vice president of mar-

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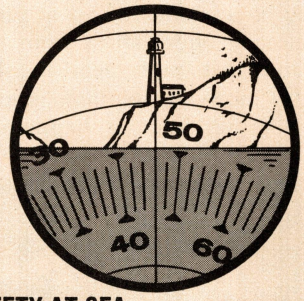
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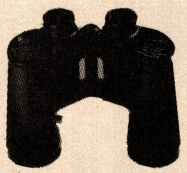
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keting, he is responsible for all sales and marketing activities within the Aqua-Lung, Survivair and Commercial Diving Divisions.

W. W. Watkins, former director of operations at Divers, has been with the company for four years. Watkins attended U.C.L.A. As vice president of operations he is responsible for all plant, procurement and quality operations for the company.

Lawrence Runyon, vice president of finance, joined U.S. Divers Co. in August, 1970, as controller. He is a graduate of U.C.L.A. with a degree in business administration and received his CPA in 1961.

Leon Cerniway, vice president of engineering, has served in the capacities of project engineer, assistant to the president and chief engineer of all divisions. He has been with Divers for three and a half years.

The newly appointed controller, Frank Davis, has been with U.S. Divers for 15 years. His former positions were chief accountant and assistant controller for the company.

PAUL HILL WITH PADI

Paul J. Hill was recently appointed field director for the Professional Association of Diving Instructors (PADI). He has experienced many facets of the diving world, including a working knowledge of dive store management, sales, promotional projects, organization and publications. He has authored and co-authored 14 articles for various diving publications, and has written two books on the subject of edible sea life.



Hill has been an avid diver since 1957 and an active scuba diving instructor since 1970. He is certified as an instructor by L.A. County, SSI, and PADI instructional programs and is a 1971 graduate of the Professional Diving Instructors College, Monterey, California.

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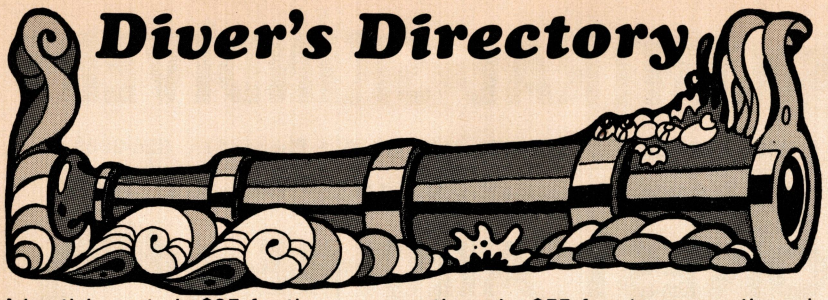


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Advertising rate is $35 for three consecutive ads, $55 for six consecutive ads, $90 for a full year. PAYMENT MUST ACCOMPANY COPY. Send all material to Divers Directory, c/o Skin Diver, 8490 Sunset Blvd., Los Angeles, Calif. 90069.

ARIZONA

EL-MAR DIVING EQUIPMENT CO.
727 North Country Club Dr. 833-2971
Mesa, Arizona Complete Diver Service
Instruction PADI - NAUI

AQUA-SPORTS, INC. — SINCE 1955
4230 E. Indian School Rd., Phoenix
Instruction—NASDS—NAUI—PADI
Air, Rentals, Repairs, ph: 955-4120

TUCSON SCHOOL OF SCUBA DIVING—SCUBA COVE
3575 E. Speedway, Tucson, Ariz. (602) 795-1440
Sales - Service - Instruction - NASDS
Photo Courses & Equip. - Indoor Pool - Trips

ARKANSAS

HEBER SPRINGS BOAT DOCK
Rt. 2, Box 312A, Heber Springs, Ark., 362-8838
Scuba Air-Ski Boats-Esso Prods.-Party Barges-Fishing, Diving Equip. Rentals-Game fish may be speared

CALIFORNIA

ARCADIA POOL & DIVE
21 W. Duarte Rd., Arcadia, Calif. 91006 447-8181
Scuba Pro - U.S.D. - At-Pac - Bayley Suits
Photo & Diving Instructions, Charters, NASDS

BAMBOO REEF ENTERPRISES
1111 University Ave., Berkeley, Ca. 548-7560
584 4th St., San Francisco, Ca. 362-6694
1959 W. San Carlos, San Jose, Ca. 275-1696

SUNLAND SPORTSLODGE/DIVE SHOP
8677 Wilshire Blvd., Beverly Hills, Ca., 652-4990
Sales - Rentals - Air - Cert. Instru. - NAUI
L.A. County - Dive Trips Cozumel - Catalina - Baja

AQUA-VENTURES (805) 484-1594 497-3413
2172 Pickwick, Camarillo, Ca. 93010 *DISCOUNTS*
Complete Course - Pool - Boat - Surf Training
Channel Island Charters - DPVs - Rtls - Rep. - 9-7

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Hwy. 1 at Pier, Cayucos. Everyday. 995-3748
750 Price, Pismo Beach 773-4794
Sales, Rentals, Air, Information

ANCHOR SHACK DIVING CENTERS
571 Jackson St., Hayward, Ca. 451-886-4656
5776 Pacheco Blvd., Concord, Ca. 415-825-4960
Scuba & U/W Photo Classes - Tours-Air-Repairs

DIVING UNLIMITED (San Diego)
1148 Delevan Drive, San Diego 714/236-1203
Certified Instruction - Custom Suits - Air
Professional Equipment - Repairs - Rentals

LAGUNA SEASPORTS
925 N. Cst. Hwy., Laguna Bch., Ca. (714) 494-6965
1951 Newport Bl., Costa Mesa, Ca. (714) 645-5820
NAUI - PADI - Rentals - Air

TUTTLE PHOTO SERVICE: LONG BEACH
4019 Atlantic Ave. (213) 424-8633
5025 E. 2nd St. (213) 434-7479
U/W Photographic Equipment Specialists.

ED BRAWLEY'S SKIN DIVING SCHOOLS
598 Foam St., Monterey (408) 373-1377
514 S. Bayshore Blvd., San Mateo (415) 343-3483
2756 Camino Diablo, Walnut Creek (415) 934-8581

AQUATIC CENTER
4535 W. Coast Hwy., Newport Beach 714-673-5440
308 N. Harbor Blvd., Santa Ana 714-531-6825
1155 N. Coast Hwy., Laguna Beach 714-494-9377

SCUBA DUBA DIVE (213) 761-7833
12538 Ventura Blvd., North Hollywood, CA.
Mon.-Sat. 10am-9pm Commercial Diving
Boat Trips - Instr. - Sales - Service - Rentals

PROFESSIONAL S.C.U.B.A. REPAIR
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Professional Repair Is Our Only Business
Servicing All Makes & Models of Equipment

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W/W II Paravane 18' Fiberglass Hull, Trailer
Mounted - Unfinished Submarine. Sell Cheap.

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1020 Grand Ave., San Diego, Calif. 272-1120
348 E. Grand, Escondido, Calif. 746-8980
155 So. Hwy. 101, Solana Beach, Ca. 755-6822

CALIFORNIA DIVERS SUPPLY 863-3744
630 Octavia St., San Francisco, CA.
Sales - Rentals - Instruction - Air $1.00
U.S. Divers Hdqtrs - Open 9 am-9pm 7 days

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7066 Van Nuys Bl., Van Nuys, Ca. (213) 787-7066
18503 Hawthorne Bl., Torrance, Ca. (213) 542-8609
NAUI - PADI - Rentals - Air

JAKE'S SCUBA CENTER (805) 642-2359/642-8600
2805 Palma Dr., Ventura, Ca. 93003
Air, Scuba School, Rentals, Repairs, Custom Suits
Boat "Sea Packer" for Island dive (805) 644-6611

OLYMPIC SCUBA SCHOOLS 935-2294
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Instruction - Rentals - Repairs - Air
National Certification. Dive Trips.

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3860 Rosecrans St., San Diego (714) 298-0531
MON.-SAT. (8:30 am-9 pm) Sun. (8:30 am-6 pm)
The World's Largest Distributor of Diving Equip.

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11830 W. Pico Blvd., W. L.A. (213) 477-5021
Take Bundy off Sta. Mon. Fwy. to Pico Blvd. Open
7 days, Mon.-Sat. (8:30 am-9 pm) Sun. (8:30-6)

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SEA WOLF DIVER'S SUPPLY
Town St., Route 82, East Haddam, Conn.
Training Pool on Premises. 873-8135
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AQUA-SPORTS, INC. 464-7878 (near sub base)
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Navy Master Diver Ret. - YMCA Cert. Instruction.
Retail - Hydrotesting. Vic Worst, Mgr.

TRI-CITY DIVERS, div. of Alpine Haus 872-6547
Route 30, Post Rd. Plaza, Vernon, Ct.
Sales - Rentals - Repairs - Air - NAUI, PADI
Instruction. Noon to 8 daily, Sat. 10-6.

A-1 DIVING CENTER 754-9575 755-9772
862 Hamilton Ave., Waterbury, Conn. 06706
Everything for Skin & Scuba Divers: Air, Hydrotest,
Repair, Rentals, Cert. NAUI & YMCA Instruction

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Noon to 8 p.m. daily, 10 a.m. to 6 p.m. Sat.

UNDERWATER SWIMMERS, INC.
526 Main St., West Haven, Conn. (203) 932-0258
Scuba Lessons, Equipment Suppliers, Air, Repairs,
Commercial work, rentals, hydro testing

DELAWARE

FIRST STATE SPORTS, INC. 655-5501
2150 New Castle Ave., New Castle, Del.
NAUI Instruction-Sales-Service-Air-Rentals
Ocean Wreck Diving-Tours-Repairs-Testing

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UNDERSEAS, INC. (305) 872-2700
Box 319, U.S. 1, Big Pine Key, Fla. 33043
Equip., Air, Rntls, Repair, Reef Charters, Shelling
Guides, Photo, Spearfishing, Trop. Fish Collecting

UNDERWATER UNLIMITED DIVING CENTER
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Rentals, Sales, Repair, Air, Travel
Certified Instruction - NASDS - NAUI - YMCA

PT. PARADISE RESORT & DIVE CTR. (904) 795-3111
Box 516, Crystal River, Fla. 32629. 100 Rm. Motel
& Rest. facility 100 yds. from Fla. lgst. springs.
Club rates. Marina - Boats - Air - Rentals

HERB'S DIVE SHOP (904) 253-7221
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Full Diver Service Including Basic, Open Water,
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524-2112 Instructions 581-7026

FT. LAUDERDALE — Reef Trips $10.00, Wreck Diving, Scuba — Too. Captain Joe Schirck — Certified Scuba Instructor, 5001 S.W. 90 Way, Ft. Lauderdale, Fla. 33314, Ph. 583-2352

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Repairs — Instruction (305) 565-6784

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THE REEF SHOP DIVE CENTER & CHARTER SERV.
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Eqpt. rntl. sls, repair, air, day/night reef trips,
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UNDERWATER DESIGNERS COMPANY
4591 St. Johns Ave., Jacksonville, Fla. (348-3655)
13637 Beach Blvd., Jacksonville, Fla. (246-6729)
Sls Rp., Rtls, Air, Inst., YMCA, NAUI, PADI, FSDA

KEY COLONY DIVERS (305) 743-5960
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Guided Reef Trips - Sales - Rentals - Group Rates

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Charters to Pennekamp Park - NASDS, NAUI, Air
Retail-Wholesale-Rental-Motel Reservations

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Daily Reef Trips, Charters to Dry Tortugas.

REEF RAIDERS DIVE SHOP
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Charters, Certifications, Rentals, Air
"We're Just Good People," Y'all Come.

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(Last shop on Rt. 1 before Keys) NAUI/PADI
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NEW ENGLAND DIVERS — Miami Division
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The World's Largest Distributor of Diving Equip.

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NAUI Instruction — Open seven days.

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CENTRAL FLA. DIVERS SUPPLY 904-732-4120
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Sales, Service, Rentals—24 hr. Air Fills
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Charter Trips to Bahamas & Fla. Springs

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Reef-Wreck Trips in Clear Blue Gulf Stream. NAUI
INST. - Sales - Rental - Air - Accommodations

TREASURE COVE DIVE SHOP (305) 942-8448
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Sales, Service, Cert. Instr., Nite Dives, Reef
Trips, U/W Photography Classes, Hrs. 8am-6pm

COLONNADES UNDERSEA CENTER 844-5291
2525 Lake Dr., Riviera Beach, Fla. 33404
Instruction - Diving, Photo., Marine Biology
Daily Trips, Sales, Rentals, Accommodations

DAYTONA DIVE CENTER 904-761-3622
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Sport & Commercial Dive Equip. - Trips - Rentals
Instruction - PADI - NAUI - 3000psi AIR - Repairs

IDEAL SPORT SHOP (305) 287-1400
Stuart Shopping Ctr., U.S. #1, Stuart, Florida
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NAUI Instruction - Rentals - Repairs - Serv. - Air

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Send for Brochure and Class Starting Dates

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Serving John Pennekamp Underwater State Park
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U.S. 1. P.O. Box 111, Upper Key Largo, Fla. 33038

PENNEKAMP DIVE CENTER (305) 451-1621
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Located in John Pennekamp State Park
Serving the Recreational Diver

GEORGIA

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Certified YMCA Classes - Weekend Diving Cruises

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Instruction-Basic-Advanced-U/W Photography
Full Service Shop-Bus-Boat Guides-6 Days

HAWAII

DAN'S DIVE SHOP, INC. Ph: 946-7333
1382 Makaloa St., Honolulu, Hawaii
Complete Scuba Diving Service, Sales, Rentals
Instr., Charters, Outer Island Trips, Air.

SOUTH SEAS AQUATICS Ph: 538-7724
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Diving Charters & Rides from Glass Bottom Boat
Sales, Rentals, Air, Charter, Instruc., Free Brochure

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for Divers. 4257 Rice St., Lihue, Kauai, Ha. 96766
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Write for Free Map & Brochure or Phone 245-6361

CENTRAL PACIFIC DIVERS
"Dive the Best Spots in Hawaii"
Charters, NAUI Instruction, Retail Sales
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LAHAINA DIVE SHOP (Maui) 661-3497
811 Front St., Lahaina, Maui 96761
Charters - Sales - Rentals - Air
Guides - Diving Information

SCUBAWAGON INC. (808) 661-8082
Capt'n Mike Foster, NAUI, 175 #21 Baker St.,
Lah., Ha. Resort Dive Tours — Advance Diving
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713 Front Street, Lahaina, Maui 808-661-3990
Oldest and Largest in Hawaii
Charters - Sales - Rentals - Air -Instruction

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Air - Rentals - Tours - Service

SEA-SUN SPORTS
6932 W. 16th St., Berwyn, Ill. ST8-8000
Air - Rentals - Hydro 4 day service - Repairs
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AQUAVENTURE DIVING SCHOOL NASDS/NAUI
O'Hare Inn — 6600 N. Mannheim Rd. 297-3120
Arlington Park Towers, Euclid & Rolling 398-5139
Instruction, Sales, Rentals, Air, Repairs, Tows.

THE DIVE SHOP, INC. Ph: 472-5978
1440 Fullerton Ave., Chicago Divers Headquarters.
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Air Compressors Sold - Instr. - Hydrotesting.

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Full Service Shop, Rental, Repair, Lessons
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Wholesale, Retail, Cert. Instructions, Rentals,
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ELMER'S WATERSPORTS, INC.
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Equipment Sales - Services - Rentals - Air -
Tours. Certified Instruction YMCA-PADI.

DIVE AND SKI
504 W. Burlington Av., Lagrange, Ill. 354-0122
2942 W. 95th St., Evergreen Park, Ill. 425-0822
16005 S. Harlem Av., Tinley Park, Ill. 429-0822

BLUE HOLE, INC. (309) 676-1852
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INSTRUCTION - Sales - Service - Rentals - TOURS
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126 S. Villa, Villa Park, Ill.
Underwater salvage
Scuba Instr., Sales, Rental, Air.

AQUA GEAR SCUBA CENTER (312) 393-9404
28W 264 Aurora Rd., Box 408, Warren Ville, Ill.
Air Equip. Lessons-Hrs, M-F 5pm-9pm, Sat. 12-9 pm
Credit at Bank Rates

AQUATIC SPORTS CENTER 312-623-1530
1703 Washington, Waukegan, Ill. Professional
Diving Sales & Service - Instruction - Rentals -
Air - Repairs - Hydrotesting - VIP - Tumbling

KANSAS

THE DIVE SHOP, INC. K.C. Area 913-381-4400
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Photography, Repairs, Air, Rentals, Commercial.

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Commercial Gear-Hydrotesting-Mini Compressors

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Oil-Rig Diving Trips for Big Fish
Warm, Clear Water — Fantastic & Fun-Fun

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RFD #3, Turner Rd., Auburn, Maine
Air, Rentals, Cert. Inst., Hydrotest, Sales
Service, open 6 days a week till 11 P.M.

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Complete Line of Diving Equipment — Sales -
Service - Rentals - Hydrotests. Air Station.

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Suits, Skis, Open 6 Days Wk, On Call 24 Hrs a Day

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Tozer Rd., Beverly, Mass. (617) 922-6951
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Olympic size indoor pool for instruction.

CHATHAM DIVE-IN! (617) 945-0313
Route 28, Chatham, Mass.
Sales, Service, Air, Rentals, Cert. Instr.
Open Dives, Dive Site Directory

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84 West St., Greenfield, Mass.
Certified Instructions, Rentals & Refills
Underwater Metal Detectors

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196 Middlesex St., Lowell, MA. 01852. Full svc.
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- Air - Rentals - Hydrotesting - Dive trips Instr.
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322-6291. Sales-Rentals-Air-Repairs-Instruction
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Basic & Open Water Classes, Photography
Trips, Full Service . . . . Tel. 617-666-0410

DUKE & RAY SPORTS CENTER, INC. (617) 846-7366
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NASI Certified, Ocean Intr., Service
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MICHIGAN

SEAWAY DIVING & EQUIPMENT CO.
26550 Grand River, Detroit (313) 255-0850
2819 N. Woodward, Royal Oak (313) 576-1120
Air - Sales - Rentals - Instruction -Trips - Repairs

FLINT DIVER'S SUPPLY, INC.—N.A.S.D.S.
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Repairs. Large 15 ft. deep heated pool—nuf said

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Open 7 days 9 a.m.-9 p.m. 4 blks. west of I-75
Air — Rentals — Instruction — Tourist Info.

SEAWAY DIVING & EQUIPMENT CO.
3024 E. Michigan Ave., Lansing (517) 332-0841
24520 Harper Ave., St. Clair Shores (313) 779-2570
Air - Sales - Rentals - Instruction -Trips - Repairs

UNDERSEA SPECIALTIES (313) 982-4900
2415 Pine Grove, Port Huron, Mich.
sales, rental, air, repairs, 18 ft dp heated pool
Chrtrs Lake Huron wrecks, NAUI instr. u/w photo.

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Sales, Rentals, Air, Repair.

SCUBA NORTH, INC. (616) 947-2520
13709 W. Bay Shore Dr., Traverse City, Mi. 49684
Retail, Wholesale, Rentals, Air, Repairs
NAUI, PADI Instr., Dive Boat Charters

PRO-DIVE'S PROFESSIONAL DIVING INSTRUCTION
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YMCA, PADI Basic, Advanced and Private Classes
Complete Lake Surveys and Water Analysis Work

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4251 Nicollet Ave., So. Mpls., Mn. 55409
Sales - Repairs - Rentals - PADI Instructions
Free Instr. - Air - Hydro - Pro. Work - Free Cat.

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1900 Central Ave., Mpls., Mn. 55418
Sales, Rentals, Repairs - 10 Refills $7.50
NAUI Instruction. Indoor Heated Pool.

CLUB SCUBA 473-4266
15802 Wayzata Blvd., Wayzata, Mn. 55391
NASDS Cert. Inst. - Air - Rental - Sales
Service - Scuba Travel Trips

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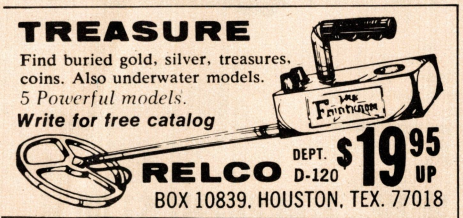
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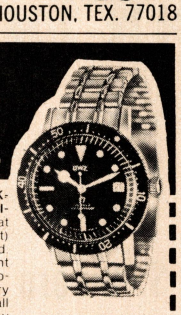
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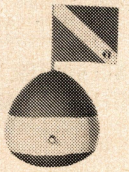
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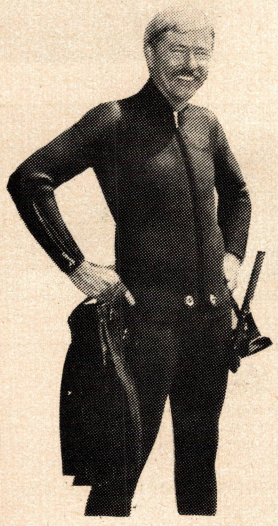
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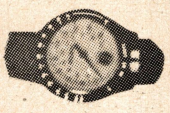
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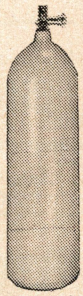
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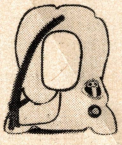
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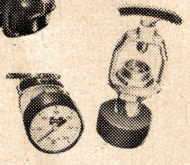
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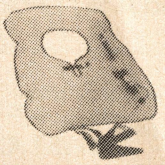
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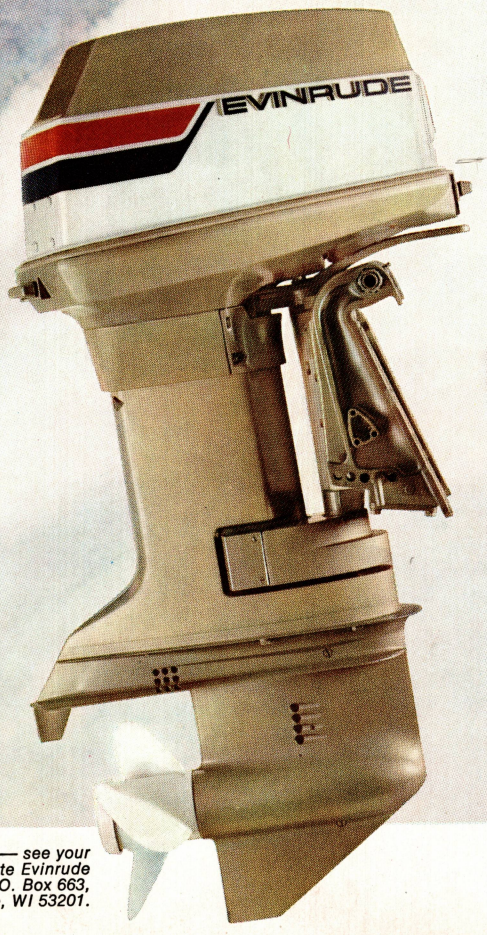
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